THE ELECTRONIC DAILY SCHOOL NOTE: A STUDY EXAMINING AN EVIDENCE-BASED SCHOOL INTERVENTION PACKAGE FOR IMPROVING ON-TASK BEHAVIOR, ACADEMICS, AND HOME-SCHOOL COLLABORATION

by

Laura C. Lopach

A dissertation submitted to the faculty of
The University of Utah
in partial fulfillment of the requirements for the degree of

Doctor of Philosophy

Department of Educational Psychology

The University of Utah

August 2016

Copyright © Laura C. Lopach 2016

All Rights Reserved

The University of Utah Graduate School

STATEMENT OF DISSERTATION APPROVAL

The dissertation of **Laura C. Lopach**

has been approved by the following supervisory committee members:

William R. Jenson	, Chair	**04/15/2016** Date Approved
Elaine Clark	, Member	**04/15/2016** Date Approved
John L. Davis	, Member	**04/15/2016** Date Approved
Robert E. O'Neill	, Member	**04/15/2016** Date Approved
Julia Ann Kelly Hood	, Member	**04/15/2016** Date Approved

and by **Anne Cook**, Chair/Dean of

the Department/College/School of **Educational Psychology**

and by David B. Kieda, Dean of The Graduate School.

ABSTRACT

The efficacy of home notes has been extensively documented across decades of research for improving classroom behavior, academic skills, and home-school communication. However, when used in traditional paper form, home notes may be forged, lost, or destroyed. More recently, there has been increased interest in web- and technology-based interventions due to increased feasibility, accessibility, and efficiency. However, more research is needed in this area.

The purpose of the current study was to replicate and extend Knorr's (2015) research evaluating the effectiveness of an Electronic Daily School Note intervention package for improving on-task behavior, math performance, and home-school collaboration. A multiple-probe, multiple-baseline single-subject design was used. The study was conducted in one public elementary school serving predominantly low-income ethnic minority students. Participants included four males in either the fourth or fifth grade who were referred by their teacher for having lower rates of on-task behavior and math performance as compared to classroom peers. During the intervention phase, participants' on-task behavior and parent review of the Electronic Daily School Note were contingently reinforced.

Results indicate that the Electronic Daily School Note intervention package produced large increases in participant on-task behavior (Tau-U = .90; IRD = .88), which were maintained at a three-week follow-up (Tau-U = .60; IRD = .49). Three of four

participants' rates of on-task behavior approximated that of classroom peers during the intervention phase. Correlational coefficients between teacher ratings on the Electronic Daily School Note and data obtained via direct observation were at or above .70 and significant at the .05 level. Participants demonstrated medium to large increases in math problem completion (Tau-U = .65; IRD = .67) and large increases in accuracy (Tau-U = .70; IRD = .71) on curriculum-based math worksheets. However, these effects were maintained for only one participant at three weeks follow-up. Parents reviewed Electronic Daily School Note data with their child 84% of the time. The intervention had high parent and student acceptability. Teacher social validity ratings were mixed. All parents and teachers reported the Electronic Daily School Note intervention package improved their home-school collaboration. Study limitations and future research directions are discussed.

TABLE OF CONTENTS

ABSTRACT iii

LIST OF TABLES vii

LIST OF FIGURES viii

INTRODUCTION AND LITERATURE REVIEW 1

- On-Task Behavior 3
- Behavior Assessment and Progress Monitoring 4
- Home Notes 9
- Early Research Reviews 10
- Home Notes for Behavior 12
- Home Notes for Academic Performance 14
- Hybrid Home Notes 16
- Meta-Analytic Findings and Recent Research 18
- Training and Treatment Fidelity 21
- Reported Use and Acceptability 23
- Implementation 24
- Potential Issues 28
- Contingent Consequences 29
- Controversies 30
- Web- and Technology-Based Interventions 35
- Purpose of the Study 39

RESEARCH QUESTIONS 41

METHODS 43

- Participants and Research Site 43
- Dependent Measures 47
- Research Design 51
- Materials 52
- Procedures 61
- Data Analysis 73

RESULTS 76

Research Questions 76
Interobserver Reliability 109
Treatment Fidelity 110

DISCUSSION 111

Introduction 111
Previous Research 112
Considerations for Implementation 115
Controversies 116
The Electronic Daily School Note Intervention Package 118
Study Findings 120
Relation to Previous Research 122
Study Limitations 127
Future Research 129

Appendices

A. CONSENT AND ASSENT FORMS 132

B. QUESTIONNAIRES 144

C. OBSERVATION FORM 151

D. FUN 'O' METER 153

E. CURRICULUM-BASED MATH WORKSHEETS 155

F. FIDELITY CHECKLISTS 158

G. ELECTRONIC DAILY SCHOOL NOTE 170

H. REWARD DAY NOTIFICATION 172

I. REWARDS MENU AND REWARD SPINNER 174

J. CHART MOVES BOARD 177

REFERENCES 179

LIST OF TABLES

1. On-Task Percentages for All Participants Across Baseline and Intervention Phases....78

2. Baseline to Intervention Effect Sizes for On-Task Percentage....78

3. On-Task Percentages for All Participants Across Study Phases....81

4. Baseline to Follow-Up Effect Sizes for On-Task Percentage....81

5. Pearson Correlation Coefficients for All Participants and Teachers....87

6. Math Problems Completed Across Study Phases....89

7. Baseline to Intervention Effect Sizes for Math Problems Completed....89

8. Baseline to Follow-Up Effect Sizes for Math Problems Completed....89

9. Math Problems Completed Correctly Across Study Phases....93

10. Baseline to Intervention Effect Sizes for Math Problems Completed Correctly....93

11. Baseline to Follow-Up Effect Sizes for Math Problems Completed Correctly....93

12. Parent Review Percentage of Electronic Daily School Note Data....96

13. Parent Intervention Scale Responses....97

14. Teacher Intervention Rating Scale Responses....102

15. Child Intervention Rating Scale Responses....106

16. Average Participant Fun 'O' Meter Rating....109

17. Interobserver Reliability for Observation Training Video....110

18. Interobserver Reliability Throughout Study Phases....110

LIST OF FIGURES

1. Example Customized Electronic Daily School Note 53

2. Example Electronic Daily School Note Ratings Within a Google Sheet 54

3. Example Electronic Daily School Note Ratings Line Chart 55

4. Example Reward Day Notification 56

5. Example Chart Moves Board 60

6. Participant Rates of On-Task Behavior Across Study Phases as Measured by Independent Direct Observation Probes 79

7. Comparison of On-Task Percentages Between All Participants and Peers Across Baseline to Intervention Phases 84

INTRODUCTION AND LITERATURE REVIEW

On-task behavior generally refers to engagement in and compliance with appropriate instructional activities (Jenson & Sprick, 2014). Strongly related to achievement, classroom behavior, and positive teacher interactions, on-task behavior has been identified as a critical factor impacting student academic success (Jenson & Sprick, 2014). Typically progressing students are estimated to be on-task 85% of the time or more (Rhode, Jenson & Reavis, 2010). In contrast, students with academic or behavioral difficulties are generally on-task 50% of the time or less, representing a substantial loss of instructional time and learning opportunities (Jenson & Sprick, 2014). Off-task behavior may also prevent the learning of others, as it interferes with teacher instruction (Greenwood, Horton, & Utley, 2002). Off-task behavior occurs at a disruptive level in 8-12% of elementary students (Owens, Holdaway, Zoromski, Evans, Himawan, Girio-Herrera, & Murphy, 2012), and often for children with behavioral difficulties, multiple behavioral challenges are evident (Ducharme & Shecter, 2011). These effects negatively impact the entire class, resulting in more teacher time devoted to classroom management and less time dedicated to academic instruction (De Martini-Scully, Bray, & Kehle, 2000). In a survey of American teachers, 17% reported losing four or more hours of instructional time each week as a result of disruptive behaviors, while another 19% reported losing two or three hours each week (Walker, Ramsey, & Gresham, 2004).

Over 75% of new teachers report feeling unprepared to effectively address

disruptive student behavior, and approximately 30% of teachers report having considered leaving the teaching profession due to frustration with student behavior problems (Volpe & Fabiano, 2013). Among elementary teachers, behavior management skills consistently emerge as a highly ranked area of need for professional development (Volpe & Fabiano, 2013). Additionally, teachers express a high need for training on effectively communicating with parents about in-class behavioral concerns (Volpe & Fabiano, 2013). This finding is particularly significant, as parental involvement in educational planning is associated with improved academic and behavioral outcomes (Adams et al., 2010). In addition to greater student success, more frequent parent communication increases the number of opportunities to foster more positive home-school relationships and increase collaboration (Adams et al., 2010).

The home note has been identified as a highly effective intervention strategy for improving student behavior, academic performance, and home-school collaboration (Holdaway & Owens, 2015; Knorr, 2015; Vannest et al., 2010; Williams et al., 2012). Home notes have been successfully used to address a range of academic and behavioral concerns in children from all age groups and in various educational settings (Jurbergs et al., 2010). The home note involves identifying specific target behaviors that are rated on at least a daily basis at school, and information is then shared with another party (Chafouleas, Riley-Tillman, & McDougal, 2002). As a result, teachers, parents, and students communicate on a daily basis, facilitating mutual problem solving (Volpe & Fabiano, 2013). The home note is a simple, inexpensive, time-efficient, and flexible method for transmitting feedback to students and parents in an easily interpretable fashion (Burke et al., 2009; Chafouleas, Riley-Tillman, & McDougal, 2002).

Despite its benefits, the home note is also associated with a number of drawbacks. When used in traditional paper form, home notes may be forged, lost, or destroyed (Rhode, Jenson, & Reavis, 2009). Recent efforts have begun to examine the effectiveness and utility of email-based interventions to both circumvent treatment obstacles and increase efficiency (Knorr, 2015; Williams, Noell, Jones, & Gansle, 2012). However, more research is needed in this area.

On-Task Behavior

On-task behavior has been defined various ways in the literature, but generally refers to active and passive engagement in contextually appropriate classroom activities. Ducharme and Schecter (2011) describe a student as being on-task "when they are actively engaged in classroom activities that facilitate learning and not engaged in behaviors that detract from learning" (p. 266). Hintze and Matthews (2004) define on-task behavior as "actively or passively engaged with appropriate instructional materials" (p. 261). More specifically, behaviors such as maintaining eye contact with the teacher, compliance with directions, and work completion are identified as essential components of on-task behavior (Jenson & Sprick, 2014; Rhode, Jenson, & Reavis, 2010). On-task behavior is strongly related to academic performance, and has been identified as one of the most important influences on student academic success (Bowen, Jenson, & Clark, 2004; Jenson & Sprick, 2014). In addition, on-task behavior is one of the ten most valued behaviors as rated by teachers (Jenson & Sprick, 2014; Walker, Ramsey, & Gresham, 2004; Walker & Rankin, 1983).

A keystone behavior has been defined as a "relatively circumscribed target

behavior that is foundational to a range of skills and related to other responses such that, when modified, can have a substantial positive influence on those responses" (Ducharme & Schecter, 2011, p. 261). More recently, on-task behavior has been conceptualized as a keystone behavior due to its substantial impact on student learning and academic performance (Ducharme & Schecter, 2011). Increased on-task behavior has been shown to enhance academic achievement, classroom behavior, and positive teacher interactions (Jenson & Sprick, 2014; Reavis, Kukic, Jenson, Morgan, Andrews et al., 1996). On-task behavior is incompatible with disruptive behavior, meaning that it is impossible to simultaneously be on-task and engage in inappropriate behaviors (Jenson & Sprick, 2014). Interventions that target on-task behavior are more likely to produce positive spillover effects such as increases in academic achievement and decreases in disruptive behavior (Ducharme & Schecter, 2011; Jenson & Sprick, 2014; McKissick, Hawkins, Lentz, Hailey, & McGuire, 2010). Targeting specific keystone behaviors such as on-task behavior promotes generalization of desired behaviors to other skill areas (Ducharme & Schecter, 2011). Taken together, there is a clear need for interventions to increase students' on-task behavior to facilitate learning and promote greater academic success.

Behavior Assessment and Progress Monitoring

Behavioral progress monitoring is an ethically and legally required component of all behavior intervention plans (Burke & Vannest, 2008). Progress monitoring data facilitate intervention evaluation and decisions regarding a student's response to intervention. Stichter and colleagues (2009) recommend that behavior assessment methods be precise, include comprehensive environmental assessment, and capitalize on

the use of technology to measure the most salient and practical variables. Chafouleas and colleagues (2013) outline several desired characteristics of behavioral progress monitoring assessments. Namely, ideal progress monitoring tools require a limited amount of resources, are easily repeatable, are flexible and adaptable to fit numerous contexts, and are psychometrically defensible.

At present, very few existing behavior assessments are designed for more universal applications, with even fewer developed for the explicit purpose of progress monitoring (Chafouleas et al., 2013). Among the most commonly employed universal behavioral assessment methods are permanent products and behavior rating scales. Permanent products, such as office discipline referrals, involve existing data that may be reviewed and analyzed at a later time (Riley-Tillman et al., 2008). However, the psychometric properties of permanent products have not been evaluated, and represent only a restricted range of behavior (Riley-Tillman et al., 2008). Office discipline referrals are often comprised of externalizing behavior only severe enough to warrant disciplinary action. In contrast, behavior rating scales provide a global summary target behavior over the course of several weeks (Volpe & Fabiano, 2013). Behavior rating scales may be more sensitive to behaviors with low incidence or intensity and are often used in universal screenings (Burke & Vannest, 2008). However, behavior rating scales are not sufficiently sensitive to measure behavior change over time, and are not intended for frequent use with large numbers of students (Riley-Tillman et al., 2008).

Direct Observation

For over 75 years, direct observation has been considered a reliable and valid behavioral assessment method, and is often regarded as a gold standard for behavioral assessment practices (Stichter & Riley-Tillman, 2014). Direct observation is comprised of event- and interval-based observation recording systems used to measure predetermined and operationally defined target behaviors (Lewis, Scott, Wehby, & Wills, 2014). Event recording strategies involve recording the occurrence of a behavior during a predetermined time period. Interval-based observation systems involve recording the occurrence or nonoccurrence of a behavior during a predetermined time interval, often 10- or 15-s each. Interval-based observation systems, otherwise referred to as systematic direct observations (SDOs), are among the most commonly used method in schools, with over 68% of school psychologists reporting moderate to frequent use (Chafouleas, Briesch, & Eckert, 2008; Hintze & Matthews, 2004; Riley-Tillman).

Systematic direct observation is frequently used with audio, video, or mobile applications for time-keeping and standardization purposes (Adamson & Wachsmuth, 2014). Research in the last ten years suggests that academic engagement, off-task, and disruptiveness are the most common behaviors measured by SDO (Adamson & Wachsmuth, 2014). Results of a meta-analysis conducted by Adamsom and Wachsmuth (2014) indicate an average interobserver agreement of 89% and an average intra-class correlation of .91. These results suggest that SDO demonstrates moderately high psychometric properties.

Although considered the gold star method of behavior assessment, SDO has a number of limitations (Chafouleas, Riley-Tillman, Sassu, LaFrance, & Patwa, 2007).

Hintze and Matthews (2004) report that in order to achieve adequate reliability using SDO, it would be necessary to conduct four 15-min observations per day for more than four weeks. This represents a substantial and impractical time requirement and suggests the need for more time efficient behavioral assessment methods, particularly in school settings where resources are limited.

Additionally, the number of behaviors to be measured is restricted by increased time allocation, greater attentional demands, and rapidly changing classroom environments (Lewis et al., 2014). This is particularly true when complex or frequently occurring behaviors are targeted, which dramatically compound time and resource requirements. Even behaviors that are subtle, infrequent, or of low intensity may be difficult to accurately measure, as often only a small behavioral sample is captured by SDO (Riley-Tillman, Chafouleas, & Briesch, 2007).

It is imperative that behavioral assessment measures to be used in applied settings have good contextual fit. More specifically, measures to be adopted by schools must strike a fine balance between comprehensiveness and efficiency while maintaining a high degree of efficacy. The limitations of current behavioral assessments suggest a need for alternative or supplemental methods for effective use in schools (Lewis et al., 2014).

Direct Behavior Rating

Teachers often view data collection and progress monitoring as burdensome, significantly impeding academic instructional time (Burke & Vannest, 2008). Because behavioral progress monitoring is both legally mandated and considered best practice for intervention evaluation, there is a need for more practical evidence-based monitoring

strategies (Burke & Vannest, 2008). One behavior assessment method specifically designed and intended for progress monitoring is direct behavior rating (Chafouleas, Jaffery, Riley-Tillman, Christ, & Sen, 2013).

First developed by Chafouleas and colleagues in 2007, direct behavior rating (DBR) refers to a category of direct measures that combine aspects of both SDO and behavior rating scales (Volpe & Fabiano, 2013). DBR involves a brief rating of target behaviors by an individual in a naturalistic setting (Chafouleas et al., 2013; Kilgus, 2013). Ratings occur immediately after predetermined time periods, and are based on the student's behavior during those intervals (Chafouleas et al., 2013). Target behaviors may be either narrowly or broadly defined (Kilgus, 2013). DBRs occur to assess target behavior at least once per day, and behavioral rating information is exchanged between parties (Kilgus, 2013).

DBRs are similar to SDOs in that they may be used to frequently assess behavior in real time and in a standardized fashion (Christ, Riley-Tillman, Chafouleas, & Boice, 2010; Riley-Tillman et al., 2008;). DBRs also share characteristics of behavior rating scales, including the use of qualitative and Likert-type scales to assess behavior along a continuum of frequency, duration, or intensity (Christ et al., 2010; Riley-Tillman et al., 2008). Ratings are intended to capture and quantify perceived estimates of target behaviors over a matter of minutes to several hours, as opposed to several weeks as is the case with rating scales (Christ et al., 2010; Volpe & Fabiano, 2013). DBRs can be completed by anyone who directly observes the student during the specified time interval (Chafouleas et al., 2013).

Data obtained via DBR and SDO are highly correlated, and often lead to similar

programmatic or treatment decisions (Chafouleas, McDougal, Riley-Tillman, Panahon, & Hilt, 2005; Chafouleas, Riley-Tillman, Sassu, LaFrance, & Patwa, 2007; Riley-Tillman et al., 2008). DBR also demonstrates a high level of acceptability and use among school psychologists and teachers as a formative behavior assessment (Riley-Tillman, Chafouleas, & Briesch, 2007; Riley-Tillman et al., 2008). In comparison to SDO, DBR is more time efficient, simple, and flexible, and less intrusive in the classroom with ratings taking as little as 10 s to complete (Fabiano et al., 2009). In addition, little training is required to reliably approximate expert ratings, and as few as five or six observations are recommended for aiding educational decisions (Burke, Vannest, Davis, Davis, & Parker, 2009; Christ et al., 2010; LeBel, Kilgus, Briesch, & Chafouleas, 2010).

Home Notes

Efficient behavior assessment and progress monitoring strategies are critical to making timely programmatic decisions, providing immediate performance feedback, and facilitating academic growth (Volpe & Fabiano, 2013). The home note has been identified as a highly effective intervention and progress monitoring strategy for improving student behavior, academic performance, and home-school collaboration (Holdaway & Owens, 2015; Knorr, 2015; Vannest et al., 2010; Williams et al., 2012). Originally described as a checklist (Edlund, 1969), home notes have been referred to by various other names, including *brag sheets* (Lahey et al., 1977), *daily report cards* (Dougherty & Dougherty, 1977), *home-based reinforcement* (Bailey, Wolf, & Phillips, 1970; Barth, 1979), *home-school notes* (Kelley, 1990), and *daily behavior report cards* (Volpe & Fabiano, 2013). Although no single term or definition exists within the

literature, Chafouleas and colleagues (2002) identify a set of common characteristics to describe home notes. These characteristics include identification of target behavior(s), rating of the behavior(s) on at least a daily basis, sharing obtained information with other parties in different settings, and using the information to monitor progress and evaluate intervention effects. More recently, home notes have been described as a form of DBR (Fabiano et al., 2009). By having no firm definition, home notes maintain a high degree of flexibility to accommodate the individualized needs of students, parents, and teachers (Frafjord-Jacobson, Hanson, McLaughlin, Stansell, & Howard, 2013).

Early Research Reviews

Atkeson and Forehand (1979) conducted the first known comprehensive review of home note interventions. These interventions were referred to as home-based reinforcement programs, and were described as involving communication of classroom rule violations or academic behavior to parents. Parents were then described as providing home consequences contingent on this feedback. Authors reviewed 21 studies, conducted between 1969 and 1977, using a home note intervention to target academic and disruptive behaviors. Results suggested that home notes were universally effective interventions and that treatment effects were shown only when contingent consequences were incorporated. However, only 63% of reviewed studies employed adequate research designs such as reversal, multiple-baseline, or group designs. Additionally, only 29% of studies included more than one dependent measure to evaluate intervention effectiveness, and only 39% assessed treatment integrity. The authors concluded that more rigorous experimental evaluations were needed before more conclusive decisions could be made regarding

home note effectiveness.

Barth (1979) conducted a similar review of 24 home note intervention studies. Results suggested that home note interventions were used successfully in a variety of treatment settings, including residential treatment facilities, general and special education settings, summer programs, and home environments. In addition, results suggested that home note interventions demonstrated effectiveness for use with children from preschool to adolescence, particularly when immediate and detailed performance feedback was provided. The review also indicated that home notes significantly increased home-school collaboration, and that meaningful positive effects could be achieved with minimal teacher and parent training. However, the author noted that parent treatment compliance was not often assessed in the studies reviewed. Based on results of the review, Barth (1979) called for greater levels of parent involvement in intervention planning and intervention, and inclusion of home-based reinforcement to supplement existing school-based reinforcement.

Smith, McLaughlin, and Williams (1983) conducted a review evaluating home notes with respect to existing research findings, common component variations, social validity, and recommendations for future research. The authors reported wide variability in teacher rating format, including a dichotomy (e.g., yes/no), symbols such as happy and sad faces, and a numbered rating scale. In addition, home note studies targeted a variety of behaviors including academic performance and classroom rule behavior in children of various ages, ethnicities, and socioeconomic backgrounds. Studies also differed on the inclusion of home-based reinforcement procedures, level of parental involvement, and amount of intervention training provided to participants. Home note interventions were

reported as acceptable to parents, teachers, and students. The authors highlighted the need for future research to explore various parent training components and parent-teacher collaboration strategies.

Home Notes for Behavior

Budd and colleagues (1981) used a home note intervention to reduce disruptive behavior in 18 kindergarten students in an outpatient clinic summer program. A multiple baseline design was used to compare the effects of home-based reinforcement alone with home- plus school-based reinforcement with a teacher praise control condition. Target behaviors included *off-area*, *aggression*, *negative statements*, *disruptive movements*, *on-task*, and *talking out*. All participants received tokens for exhibiting no disruptive target behaviors during a designated time period and teachers provided frequent praise and feedback. In the reinforcement conditions, participants were able to exchange accrued tokens for a predetermined reinforcer, either provided at home or at both home and school. Parent and participants received information about intervention procedures, and parent treatment compliance was informally monitored via returned token cards. Results suggested that a home-based reinforcement system was highly effective at reducing disruptive behavior, and that delayed reinforcement was successful at modifying students' behavior. However, neither parent treatment compliance nor social validity was formally assessed.

McCain and Kelley (1993) examined the impact of a home note intervention on the behavior of a preschool student diagnosed with attention-deficit/hyperactivity disorder (ADHD). A reversal design was used. The study was among the first to evaluate

the effectiveness of a home note intervention for students diagnosed with ADHD. A home note was developed for the participant, which included target behaviors of *played well with others*, *followed directions*, *picked up toys*, and *used class-time well*. The teacher and parents received a one-hour training session on intervention procedures. Behaviors were rated on a scale of happy, neutral, and sad faces. Additional happy faces were used as reinforcers for appropriate class participation during a predetermined time period. The note was posted in a location visible to both the participant and the teacher, and the participant eventually began to self-monitor his own behavior. Reinforcement criteria gradually increased over time, and reinforcement was delivered at home. Results suggested that the intervention was effective at increasing on-task behavior and reducing disruptive behavior. However, neither parent treatment compliance nor social validity was assessed, and the generalizability of results is limited by a sample size of one.

A study conducted by McGoey, Prodan, and Condit (2007) evaluated the effects of a home note intervention on disruptive behavior in two kindergarten students. An ABAB reversal design was used. Target behaviors included *negative social interaction*, *off-task*, *noncompliance*, and *tantrums*. Teachers, parents, participants, and researchers worked collaboratively to design a home note and determine appropriate behavioral goals. Parents and researchers determined an individualized home-based consequence system contingent on home note information. Participants were reminded of their goals and were encouraged to make self-evaluations of their behavior. Teachers rated participant behaviors, which were later shared with participants and compared to the self-evaluations. Teacher ratings and goal attainment were recorded on the home note and sent home each day. Results indicated that self-evaluation and home note procedures produced reductions

in disruptive behavior for all participants. Authors highlighted the importance of home-school collaboration procedures, which resulted in larger treatment effects. Parent treatment adherence was not assessed.

Home Notes for Academic Performance

In a study conducted by Trovato and Bucher (1980), a home-based reinforcement intervention was used to target the reading skills of 90 elementary students. A group design was used, and participants were randomly assigned to three experimental groups. Study conditions included peer tutoring alone and peer tutoring plus a home note condition compared to a control condition. In the peer-tutoring component, participants read stories aloud and received corrective feedback by students in higher grades. Participants' comprehension of the stories was then assessed. In the home note component, participants received points for correct or improved reading responses. Parents received training and consultation to devise a home-based reinforcement contingency plan. A copy of this plan was signed and then given to parents for their reference. Regular parent telephone communication was maintained throughout the intervention. Results suggested that both intervention conditions were effective at improving reading abilities. However, when a home note component was included, treatment effects nearly doubled. Authors noted that treatment fidelity was not assessed, and theorized that parent treatment adherence was a significant mediator of treatment effectiveness.

Blechman and colleagues (1981) examined the effects of a Good-News Note on math work completion and accuracy in 335 elementary students in 17 classrooms. The

study used a 3 x 2 repeated measures design, and classrooms were randomly assigned to experimental conditions. A Good-News Note with and without a family problem-solving component was compared with a control condition. The Good-News Note alone condition involved sending written parent instructions and periodic positive reports of academic behavior. The Good-News Note plus family problem-solving condition involved face-to-face problem solving and collaboration, and weekly telephone communication between parents and teachers. Results suggested that intervention conditions were equally effective at improving the consistency of work completion. However, only the family problem-solving condition resulted in maintained treatment effects for work completion and accuracy. The authors theorized that the addition of home-school collaboration and regular communication increased the generalizability of treatment effects. However, neither parent treatment adherence nor social validity was formally assessed.

Drew and colleagues (1982) used a home note to improve math work completion and accuracy in two elementary students. A multiple baseline design was used. Teachers rated whether participants achieved at least 76% accuracy on assigned math problems. Participants earned home-based reinforcement contingent on teacher ratings of math work accuracy. Parents received initial training and a list of instructions for implementing a home-based reinforcement system. Weekly parent contact and consultation were maintained throughout the intervention to monitor intervention fidelity. The home note intervention increased rates of work completion and accuracy for both participants. Authors concluded that parents were able to implement the intervention with fidelity despite having received little training.

Galloway and Sheridan (1994) examined the effects of a home note intervention, implemented within the context of conjoint behavioral consultation (CBC), on math work completion and accuracy of six elementary students. Study conditions included a home note intervention alone and a home note intervention implemented via CBC. The home note intervention included a parent manual, which outlined relevant research, steps for home note implementation, suggestions for selecting appropriate reinforcers, and intervention troubleshooting. Parents provided home-based consequences contingent on meeting math performance goals as reported on the home note. The CBC component involved several standardized behavioral interviews with parents, teachers, and participants. Results indicated significantly higher treatment effects, maintenance of effects, teacher and parent treatment compliance, and consumer satisfaction ratings when the home note intervention was implemented within the context of CBC. However, it should be noted that the study used an AB design with replication, limiting the control of competing hypotheses and therefore the conclusiveness of results.

Hybrid Home Notes

A study conducted by Dougherty and Dougherty (1977) investigated the effectiveness of a home note intervention on decreasing talk-outs and increasing rates of homework completion in 15 elementary students. A multiple baseline design was used. A home note was taped to each participant's desk, and teachers rated students' behavior during reading and math periods. Parents received written suggestions for reviewing home note feedback with their child. The procedure was then faded to a weekly report. Results indicated an immediate and substantial effect on both behaviors despite almost no

teacher training or consultation. However, observer agreement was assessed only once during baseline and intervention phases, and parent treatment compliance was not assessed.

A study conducted by Leach and Byrne (1986) evaluated the spillover effects of a home note intervention for disruptive behavior and work completion in 18 Australian secondary students. A time series design was used. The home note intervention involved initial group parent training, participants earning points for rule-following behavior on a Good Behavior Card, and an exchange of points for home-based reinforcers. Parents and their children designed individualized home-based reinforcement procedures. Regular parent telephone contact was maintained throughout the intervention to monitor treatment integrity. Results indicated large, immediate treatment effects on participant rule compliance and work completion. In addition, treatment effects were shown in some students who had not received the intervention. Authors theorized that these spillover effects might have been due to an increase in positive peer models, a more positive classroom environment, and more effective teacher classroom management skills. Results indicate that home note interventions have positive effects on targeted students and perhaps the entire class. However, it should be noted that observer agreement was assessed only once during each study phase.

Jurbergs, Palcic, and Kelley (2007) examined the effectiveness of a home note intervention on improving on-task behavior and work completion. Participants included six low-income African American elementary students diagnosed with ADHD. A withdrawal design with alternating treatments was used. Treatment involved a home note intervention with and without a response cost procedure. Parents, teachers, and

participants received training, and researchers met with each family to determine an individualized home-based reinforcement system. Teachers rated participant behavior. Each rating was associated with a certain number of points, which were accrued toward a predetermined goal. The response cost procedure included crossing out smile faces for the occurrence of off-task or disruptive behavior, resulting in a loss of points. Both intervention conditions resulted in large improvements in on-task behavior, work completion, and work accuracy. Both treatment conditions also demonstrated high parent, teacher, and student acceptability. The addition of a response cost procedure did not lead to improved outcomes.

Meta-Analytic Findings and Recent Research

Vannest and colleagues (2010) conducted a meta-analysis to evaluate the effectiveness of home note interventions for improving behavior. The study examined 17 studies published between 1970 and 2007, including 107 total participants. Studies were examined based on variables including study quality, student grade level, target behavior, level of home-school collaboration, breadth of use, type of scale, and reliability assessment procedures. Overall, only 53% of included studies were of medium to very high quality, echoing the methodological concerns voiced by Atkeson and Forehand in 1979. However, study quality did not predict treatment outcomes, suggesting that positive treatment effects may be produced regardless of methodological control. Home note interventions had a mean improvement rate difference (IRD) of .61, suggesting an average behavioral improvement of 61% between baseline and intervention phases. No significant differences in treatment effects were found between grade level or target

behavior, suggesting that home note interventions are equally effective across age groups and a variety of behavior problems. Higher levels of home-school collaboration were associated with significantly larger effects; high levels of collaboration had a mean IRD of .90, medium collaboration levels had a mean IRD of .60, and a low degree of collaboration had a mean IRD of .48. Intervention applications exceeding one hour per day were associated with larger effect sizes, suggesting that longer and broader use may result in improved outcomes. Use of qualitative rating scales was associated with significantly larger treatment effects than quantitative scales, possibly due in part to higher teacher acceptability. A collaborative effort between school and nonschool personnel to conduct reliability checks resulted in improved treatment outcomes.

Fabiano and colleagues (2010) investigated the effectiveness of a home note intervention on improving the utility of individualized education plans (IEPs) and academic outcomes of students diagnosed with ADHD. Participants included 63 elementary students who received special education services as part of an IEP, and were randomly assigned to either an intervention or a business as usual condition across an entire academic year. The intervention condition used an individualized home note and home-based reinforcement system to monitor behavior, progress toward IEP goals, and increase the return rate of completed homework. In the intervention condition, parents and teachers participated in three training and consultation meetings. Monthly teacher and parent communication was maintained throughout the intervention, and three additional consultation meetings were offered as needed. Participants receiving the home note intervention demonstrated improved behavior, functioning on behavioral rating scales, academic productivity, and academic success. Teachers also rated these

participants as more likely to achieve IEP goals. Results of this study bolster the current wide support for the home note as an effective and best practice intervention for children diagnosed with ADHD (DuPaul, 1991; Pelham & Fabiano, 2008; U.S. Department of Education, 2004; Volpe & Fabiano, 2013).

Owens and colleagues (2012) examined the incremental benefits of a home note intervention to help inform implementation guidelines and treatment decisions. Participants included 66 elementary students enrolled in a university treatment program for disruptive behavior. Teachers, parents, and a program facilitator collaboratively developed an individualized home note and initial behavior goals. For most participants, home-based reinforcement was used as a supplement to school-based reinforcement. Once implemented, teachers received regular consultation to monitor intervention effectiveness and gradually increase behavioral goals. Results indicated that 72% of participants made improvements in all targeted behaviors, and an additional 20% made improvements in at least one targeted behavior. Improvements were made regardless of sex, age, intellectual ability, special education status, behavior category, behavior severity, co-occurring pharmacological treatment, and facilitator type. Large treatment gains were made during the first month of implementation, with smaller incremental benefits after months two, three, and four. The intervention had a cumulative effect size of 1.16. The authors recommended that home note interventions be implemented and monitored for at least two months before considering discontinuation. In addition, a period of deterioration signals a lower probability of continued effectiveness, highlighting the importance of setting achievable behavioral goals.

Training and Treatment Fidelity

Parent and teacher involvement has varied widely in research examining home note interventions. However, quality of parental engagement, parental treatment adherence, and teacher treatment fidelity are strong predictors of treatment effectiveness (Clarke, Marshall, Mautone, Soffer, Jones et al., 2013; Kelley & Carper, 1988; Owens et al., 2012).

Grady (2013) evaluated the impacts of a home note intervention with a short-term behavioral parent-training component on externalizing problems in elementary children. A nonconcurrent multiple-baseline design was used to evaluate the differential effectiveness of a home note with and without behavioral parent training. The behavioral parent-training component included three 45-min sessions focused on instruction, modeling, and practice of consistent responses and appropriate delivery of consequences. As compared to the traditional home note condition, the behavioral parent training intervention resulted in improved academic and behavioral outcomes and showed moderate to strong effects.

Harrison, Riley-Tillman, and Chafouleas (2014) investigated the differential effectiveness of specific training components on the accuracy of DBRs. Participants included 67 undergraduate students assigned to one of three study conditions, which included brief familiarization, brief training with practice and feedback, and extensive training with practice and feedback. Results suggested that participants in all conditions had relatively accurate ratings, the mean of which fell within two points of the true score estimates. Participants in the brief familiarization condition had similar if not higher rating accuracy in comparison to participants in the training conditions. Lower rating

accuracy and higher rater bias were evident for medium rates of behavior, suggesting a need for additional training to increase accurate discriminations between moderate levels of behavior. Overall, results suggest that brief and indirect training may be sufficient to improve accuracy and enhance outcomes, consistent with findings of previous research (Chafouleas et al., 2012; LeBel et al., 2010).

Vujnovic and colleagues (2013) examined factors influencing treatment fidelity of a home note intervention implemented over the course of a school year. A behavioral consultant met with parents and teachers for several independent training sessions intended to provide intervention orientation, training, and collaboration. Afterwards, regular monthly consultation sessions were held. Results indicated that both parent and teacher intervention fidelity was lowest during the first month of independent implementation, but remained relatively stable across the school year. Fidelity was lowest at the end of the week for both teachers and parents, particularly the day prior to a regular consultation meeting. However, treatment adherence was highest the day following the consultation meeting, a statistically significant difference. Results suggest a need for regular follow-up training sessions in order to maintain treatment fidelity long-term. In a similar vein, Hagermoser Sanetti and colleagues (2013) found that daily teacher fidelity reports were associated with higher levels of treatment integrity, regardless of the frequency and method of fidelity assessment. This suggests that regular self-monitoring of treatment implementation fidelity increases treatment integrity and treatment effects.

Holdaway and Owens (2015) compared the effects of several training and consultation conditions on teachers' ratings of acceptability and likelihood of treatment adoption. Treatment conditions included consultation with key opinion leaders,

consultation with observation and performance feedback, consultation with motivational interviewing, and professional development as usual. Consultation with key opinion leaders and performance feedback conditions received significantly higher teacher acceptability ratings and reported likelihood of intervention adoption. That teachers reported regular performance feedback as acceptable is encouraging, as regular consultation and coaching facilitates higher treatment fidelity and therefore improved effectiveness (Witt, Noell, LaFleur, & Mortenson, 1997).

Reported Use and Acceptability

Chafouleas, Riley-Tillman, and Sassu (2006) conducted a survey of 1,000 randomly selected teachers to assess the reported use and acceptability of home note interventions by teachers. Results indicated that 64% of teachers reported having used home note interventions, corresponding to 75% of surveyed elementary teachers, 65% of middle school teachers, and 45% of high school teachers. Usage did not differ by setting (i.e., general or special education) or number of years in the teaching profession. Home notes were most commonly used to communicate about and change behavior, with equal focus on increasing positive behavior and decreasing undesirable behavior. Most often, home notes were used with individual students (87%), and information was shared with parents in written form and on a daily basis. Positive consequences most commonly included praise (87%) and tangible reinforcers (61%). Aversive consequences most commonly included the removal of privileges (66%) and reprimands (52%). Almost all respondents (91%) reported that consequences were delivered in the school setting, with home-based consequences reportedly employed by approximately half (54%). Teachers

rated home note procedures as acceptable as both an intervention and progress monitoring measure. Acceptability ratings tended to be higher when teachers controlled the home note ratings. Teachers rated the home note as the most acceptable behavior modification strategy for use with students with ADHD (Volpe & Fabiano, 2013).

Similarly, previous research suggests the home note is rated as highly acceptable by both parents and students (Galloway & Sheridan, 1994; Knorr, 2015). High levels of acceptance have been found when used with individual students (Knorr, 2015; LeBel et al, 2012), entire classrooms (Adams et al., 2010) and ethnic minority populations (Jurbergs, Palcic, & Kelley, 2007, 2010).

In 2008, Riley-Tillman and colleagues conducted surveys of school psychologists on reported training, use, and acceptability of home notes. A majority (53%) of respondents reported moderate to frequent use of home notes as a behavior assessment tool. An average of 57% of respondents reported receiving moderate to intensive training on the use of home notes. Level of training predicted the frequency of reported use. Additionally, school psychologists rated the home note as an acceptable and nonintrusive assessment strategy.

Overall, research suggests that the home note is widely used as an intervention and progress monitoring tool, and is rated as highly acceptable by teachers, parents, students, and school psychologists.

Implementation

Vannest and colleagues (2011) outline five specific steps to create and implement a home note. First, identify specific target behaviors to be monitored. Target behaviors

may revolve around academics (e.g., work completion, work accuracy), disruptive behavior (e.g., noncompliance, talk-outs), school rules (e.g., keep hands and feet to self, be on time), IEP goals for students with identified disabilities, or a combination of each (Fabiano et al., 2010; Fabiano, Vujnovic, Naylor, Pariseau, & Robins, 2009; LeBel, Chafouleas, Britner, & Simonsen, 2012). Some authors recommend that academic targets focus on desired outcomes (e.g., percentage of homework returned) as opposed to process behavior (e.g., on-task), as data may be more interpretable by parents and teachers (Kelley, 1990; Kelley & Carper, 1988). Each target behavior should then be operationally defined by having descriptions that are objective, clear, and comprehensive (Volpe & Fabiano, 2013). In addition, definitions of behaviors like on-task and academic engagement should generally be global, capturing multiple areas of impaired functioning, and positively stated in order to improve rating accuracy (Chafouleas, Jaffery, Riley-Tillman, Christ, & Sen, 2013; Riley-Tillman et al., 2009; Volpe & Fabiano, 2013).

Second, determine rating settings and frequency. It is recommended that behavior be monitored over several short time periods throughout an entire school day, such as class periods (Fabiano et al., 2009; Kelley & Palcic, 2008; Riley-Tillman et al., 2011). It is considered best practice for ratings to occur at least twice per day (Volpe & Fabiano, 2013). This may be because more regular collection of data limits rater bias (Chafouleas et al., 2005). Results of a meta-analysis conducted by Vannest and colleagues (2010) suggest that longer and broader applications of home note interventions are associated with significantly larger treatment effects.

The third step is to determine a rating system that is appropriate for the target behaviors. Both quantitative and qualitative rating systems have been used with home

note interventions. Quantitative scales involve event recording, frequency counts, or count estimates of behavior (Vannest et al., 2010). Qualitative scales involve summative, retrospective, and descriptive summaries of behavior (Vannest et al., 2011). Both rating systems, when used as part of a home note intervention, are associated with improved student outcomes. However, results of a meta-analysis conducted by Vannest and colleagues (2010) suggest that qualitative, DBR-type rating scales demonstrate significantly larger treatment effects. While frequency accounts may appear more accurate, these measurement systems require a substantial and often impractical amount of teacher time and resources (Volpe & Fabiano, 2013). As a result, quantitative scales may be less acceptable, accurate, and effective in school settings. In contrast, qualitative rating scales are more time efficient, flexible, socially valid, and effective (Vannest et al., 2010; Volpe & Fabiano, 2013).

Scale categories may include happy/sad faces (Jurbergs, Palcic, & Kelley, 2010; Karraker, 1972), letter grades (Volpe & Fabiano, 2013), or a Likert-type scale with anchors on a continuum (Vannest et al., 2011). It is generally recommended that scales include at least six rating categories, maximizing the reliability of ratings and increasing sensitivity to student progress and change over time (Chafouleas, Christ, & Riley-Tillman, 2009; Vannest et al., 2011).

The fourth step is to conduct reliability checks to assess the similarity of ratings between sources (Vannest et al., 2010). Reliability assessments are considered essential to making decisions regarding program evaluation, educational placement, and intervention effectiveness (Vannest et al., 2011). These data provide information about treatment fidelity, consistency of ratings, and interpretation of behavioral definitions

among raters (Vannest et al., 2011). It is generally recommended that a reliability check be conducted for at least 20% of every teacher home note rating (Vannest et al., 2011). A weekly SDO may be collected to monitor the reliability of ratings (Riley-Tillman, Briesch, & Chafouleas, 2007). Results of a meta-analysis conducted by Vannest and colleagues (2010) suggest that reliability assessments are associated with significantly larger treatment effects, particularly if conducted collaboratively among several parties.

The fifth step is to establish a frequent and consistent form of home-school communication. Parental involvement has long been recognized to be an essential component of effective intervention and is considered best practice in the implementation of academic and behavioral interventions (Kelley, 1990; National Association of School Psychologists, 2012). Increased communication between the school and home increases the number of opportunities to improve relationships, facilitates collaborative problem solving, and places an emphasis on student success and improvement (Jurbergs et al., 2010; Kelley & Carper, 1988). Parental involvement is associated with improved academic and behavioral performance, and interventions emphasizing home-school collaboration are found to be most effective (Cox, 2005; Kelley, 1990; Vannest et al., 2010). In addition, home-school communication and collaboration is associated with improved functional, academic, behavioral, and social outcomes (Blechman et al., 1981; Galloway & Sheridan, 1994; Sheridan, Bovaird, Glover, Garbacz, & Witte, 2012). This correspondence may encourage a mutual sense of concern and accountability among all parties for student improvement (Kilgus, 2013). An increased sense of personal investment may lead to greater intervention acceptability and fidelity (Kilgus, 2013). In addition, more regular communication and feedback may result in more prompt and

evidence-based decisions regarding student performance (Kilgus, 2013).

Potential Issues

Several issues may arise when using a home note intervention that may negatively impact its effectiveness. The most common, and often the most critical, issue encountered relates to the consistency of delivered consequences (Volpe & Fabiano, 2013). Inconsistent delivery of consequences is likely to result in intervention failure and is associated with poorer student outcomes (Owens et al., 2012). In addition, home notes may be lost, destroyed, or forged (Rhode, Jenson, & Reavis, 2010; Volpe & Fabiano, 2013). By engaging in regular and consistent consultation with parents and teachers, these issues may be addressed as they occur (Owens et al., 2012). Regular problem solving may help improve the quality of the intervention and help avoid parent or teacher frustration (Owens et al., 2012). Aversive consequences may be used as a fine for forged notes (Rhode, Jenson, & Reavis, 2010).

Another common issue is that reinforcers may cease to be sufficiently motivating (Volpe & Fabiano, 2013). To avoid reinforcement satiation, each student's reward menu should be regularly updated to match student choices and preferences (Kelley, 1990; Volpe & Fabiano, 2013). Additionally, using several randomized motivational components may increase student investment in both the intervention and progress toward goals (Jenson & Reavis, 1996; Volpe & Fabiano, 2013).

Contingent Consequences

A critical aspect of home note interventions is the selection and delivery of consequences contingent on desired performance (Frafjord-Jacobson et al., 2013). Consequences may be reinforcing, which increase behavior, or aversive, which reduce behavior (Kelley, 1990). The purpose of contingency management systems is to reinforce appropriate behavior and reduce undesired behavior (Frafjord-Jacobson et al., 2013). Consequences have included praise, tangible rewards, loss of privileges, and suspension, among others (Kelley & Carper, 1988).

Contingent consequences are viewed as necessary aspects of home notes to produce meaningful behavioral change (Atkeson & Forehand, 1979; Volpe & Fabiano, 2013). In their literature review, Atkeson and Forehand (1979) found that teacher feedback to parents and students was only effective when used to deliver appropriate consequences. Similarly, verbal praise, when used in isolation, is generally not sufficiently motivating to increase appropriate classroom behavior (Kelley & Palcic, 2008). In fact, the consistency with which consequences are delivered is highly predictive of improved outcomes, while the frequency of feedback to parents appears unrelated (Volpe & Fabiano, 2013).

Jurbergs, Palcic, and Kelley (2010) examined the differential effectiveness of a home note intervention with and without home-based contingencies. Participants included 43 elementary students with attentional and behavioral difficulties. Dependent measures included on-task behavior, work completion, and work accuracy. Participants who did not receive contingent home-based consequences received daily teacher feedback. For participants in the consequence condition, contingencies included special

snacks, time with an adult, and extra TV time. Parent and teacher integrity were evaluated and suggested adequate levels of adherence. Results indicated that contingent consequences produced significantly higher rates of on-task behavior in comparison to the feedback only condition. Both conditions resulted in similar levels of improvement in work completion and accuracy. Both conditions were rated equally and highly acceptable. Authors concluded that results demonstrated the superior effectiveness of home notes with contingent consequences. Thus, it appears that home note effectiveness relies heavily on a well-developed and sufficiently motivating contingency management system.

Controversies

Reinforcement and Motivation

Since the 1970s, controversy has existed regarding whether reinforcement negatively impacts intrinsic motivation from both empirical and moral standpoints (Akin-Little et al., 2004; Cameron, Banko, & Pierce, 2001). Some authors have argued that reinforcement does not change attitudes underlying behavior; is controlling and manipulative; makes learning less appealing; and results in only temporary behavioral changes (Deci, Koestner, & Ryan, 1999; Kohn, 1993; Ryan & Deci, 1996). However, others view reinforcement as a teaching technique and method for providing feedback, positive, and having well-documented effectiveness (Cameron & Pierce, 1994; Cameron & Pierce, 1996; Chance, 1992; Chance, 1993). A number of meta-analyses have been conducted to examine the effectiveness of reinforcement and potential impact on intrinsic motivation.

In one of the earliest meta-analytic reviews, Cameron and Pierce (1994) examined

96 studies to compare reinforced and nonreinforced subjects on measures of intrinsic motivation. Results suggested that reinforcement had no detrimental effect on intrinsic motivation and in fact may increase and maintain motivation over time. These findings fueled heated debate and resulted in the publication of a separate meta-analysis conducted by Deci, Koestner, and Ryan (1999), which suggested strong negative effects of reinforcement on intrinsic motivation.

Conflicting empirical results prompted Cameron, Banko, and Pierce (2001) to conduct a more updated and comprehensive meta-analytic investigation. The study synthesized 145 studies using methodologies similar to those employed by Deci, Koestner, and Ryan (1999). Results indicated no detrimental effects of reinforcement on intrinsic motivation. Findings also indicated that reinforcement enhanced performance on nonpreferred tasks, suggesting that reinforcement may be used to increase interest and engagement in undesirable activities. In addition, results suggested that verbal reinforcement was associated with significant increases in motivation.

Akin-Little and colleagues (2004) provide best practice guidelines for use of reinforcement in school settings. It is recommended that rewards be presented only when based on a form of task completion or quality. Reinforcement should also be provided repeatedly with appropriate fading procedures once desirable behavioral changes are evident. Rather than problem solving from an intrinsic motivation perspective, case conceptualization should revolve around present and desired levels of performance and data-based reinforcement criteria. In addition, a reinforcement survey should be used to ensure that reinforcers are truly motivating for students.

Home- Versus School-Based Consequences

Traditionally, home notes have been used to provide teacher feedback to parents about a child's behavior at school. Parents have then typically delivered consequences at home based on this behavioral feedback. However, some controversy currently exists about which setting – home, school, or a combination of both – is most effective and appropriate for delivering these consequences.

There are several benefits associated with parental involvement in delivering consequences. Parental involvement facilitates greater home-school communication and collaboration, which may result in greater behavioral and academic improvements (Kelley & McCain, 1995). If school performance is linked with consequences at home as a kind of wraparound intervention, there are greater opportunities for skills to be practiced and generalized across settings (Frafjord-Jacobson et al., 2013). Parents also may have access to a wider variety of reinforcers that are not feasible in the school setting (Budd et al., 1981; DuPaul, 1991). For example, parents may be able to provide reinforcing activities such as sleepovers, later bedtime, or a reduced amount of chores. In addition, increased home involvement in treatment may increase parental consistency and the frequency of parental praise, resulting in improved outcomes (Kelley, 1990; Kelley & Carper, 1988). It has even been suggested that a greater delay in reinforcement may enhance generalization of skills (Budd et al., 1981; Kelley & Carper, 1988).

Despite the advantages of home-based contingencies, there may be instances when these systems are impractical, infeasible, or even detrimental. Parents may be unable to deliver appropriate consequences on a consistent basis, or may lack the resources to provide motivating reinforcers (Rhode, Jenson, & Reavis, 2009). Parents

may also be unwilling to participate or find the delivery of home consequences as intrusive (Rhode, Jenson, & Reavis, 2010). It may also be difficult to continuously evaluate parent treatment adherence, a critical aspect given that effectiveness may hinge on the consistency of delivered consequences (DuPaul, 1991). Some students may also not respond positively to delayed reinforcement, which may limit their success (Barth, 1979).

Johnson (2008) compared the differential effectiveness of a home note intervention using home- and school-based consequences. A counterbalanced multiple treatment design was used to evaluate the impact of school- and home-based intervention conditions on the work completion and accuracy of three participants. Grand mean effect sizes for work completion were .37 in the school-based condition, and .00 in the home-based condition. Similarly, grand mean effect sizes for work accuracy were .68 in the school-based condition and .22 in the home-based condition. Teachers, parents, and participants rated both conditions as highly and equally acceptable. Results indicate that school-based contingencies were more effective than home-based consequences. However, the generalizability of results is limited due to a small sample size.

Overall, it is recommended that home-based contingencies either be replaced by or serve as a supplement to existing school-based consequences (Barth, 1979; DuPaul, 1991; Owens et al., 2012). It may be important to evaluate a parent's ability and willingness to consistently deliver consequences on a case-by-case basis. If home-based consequences are impractical, infeasible, or even potentially harmful, school-based consequences should be used in isolation (Owens et al., 2012). It is important to use school-based consequences regardless of the level of parent involvement (Jenson, Rhode,

& Reavis, 2009).

Response Cost

For some students, positive reinforcement may be insufficient to increase appropriate behavior (Volpe & Fabiano, 2013). Response cost is a behavior intervention component that serves as a reductive or aversive consequence for undesired behavior in order to decrease that behavior. Response cost is essentially a fine system, where desired elements are removed based on occurrences of undesirable behavior (Jenson, Rhode, & Reavis, 2009). Several studies have examined whether an additive benefit exists for incorporating response cost as a component of home notes.

A study by McCain and Kelley (1994) was among the first to investigate the differential effects of home notes with and without response cost procedures. Participants included three elementary students with attentional and behavioral difficulties. An alternating treatments design was employed to compare intervention conditions, which were randomized across days for all participants. Results suggested that response cost was rated as both more effective and acceptable by parents and teachers. The authors theorized that response cost procedures could be most effective in classrooms where behavioral management strategies are needed.

Kelley and McCain (1995) compared the effects of a home note with and without response cost, and obtained similar results. Participants included five elementary students with disruptive and off-task behavior. An alternating treatments design was used to compare intervention conditions for increasing on-task behavior and work completion. Results suggested that response cost produced additive benefits when included on

traditional home notes, and was acceptable to parents and teachers.

In comparison, Jurbergs, Palcic, and Kelley (2007) found equal effects for home notes with and without response cost procedures. Participants included six elementary students, all of whom were African American, diagnosed with ADHD, and of low socioeconomic status. However, home notes with response cost were rated as more acceptable by parents and teachers. Although it remains unclear whether response cost produces additive treatment effects, this component is highly acceptable to parents and teachers, which may enhance treatment fidelity.

Web- and Technology-Based Interventions

At present, the Department of Education imposes a paperwork burden on educators that exceeds that of the Department of Defense, Department of Energy, Department of Housing and Urban Development, Department of the Interior, and Department of Justice (Education Regulations: Burying Schools In Paperwork, 2011). Between 2002 and 2009, the Department of Education's paperwork requirements increased by approximately 65%, an amount which continues to rise steadily (Education Regulations: Burying Schools In Paperwork, 2011). This burden suggests a need for strategies to increase intervention efficiency and streamline progress monitoring data without imposing additional paperwork.

Widespread Internet access and rapid advances in computer technology have generated a range of new treatment delivery options (Baggett, Davis, Feil, Sheeber, Landry et al., 2010). A majority of households, regardless of location and family demographics, have Internet access (Baggett et al., 2010). As a result, web- and

technology-based interventions have become more feasible, efficient, and practical (Baggett et al., 2010). Web-enhanced interventions are associated with a number of advantages, which include a wider reach, 24-hr accessibility in various settings, the elimination of various cost and time constraints, lessening the demands of in-person visits, greater flexibility of use, and enhanced treatment fidelity (Baggett et al., 2010). In addition, web- and technology-based interventions involve greater responsiveness to the individual preferences of users themselves, increasing autonomy and environmental control (Collins & Halverson, 2010).

Shayne (2008) conducted a survey of 292 parents of middle school students to examine reported technology use, acceptability, and impacts on home-school communication. For more than 80% of parents, an online portal and email were main sources of information regarding homework and grades. Nearly 90% of parents reportedly used and preferred electronic means to communicate and receive academic information. Forty-three percent of parents reported that electronic communication resulted in a substantial improvement in communication, while 53% reported some improvement. Approximately 70% of parents reported that online access to grades resulted in more positive school communication, 78% reported more effective communication, and 20% reported substantial grade improvements. Of parents who did not report frequent use of technology, training, and consultation on school-based technology were reported as methods for removing these obstacles.

Gable (2002) conducted the first known investigation of a home note with a web-based component. Participants included three secondary students identified as having disruptive behavior. A multiple-baseline design was used to evaluate the impact of an

emailed home note on the frequency of disruptive behavior. Every day, parents received an emailed home note and delivered contingent consequences, which included earning of desired reinforcers or loss of privileges. Parents then returned the home note to the researcher via email and indicated whether consequences had been delivered. Results indicated that the intervention effectively reduced participants' disruptive behavior, and was rated as highly acceptable by parents. Additionally, results indicated that parents and the teacher were able to implement the intervention with 100% treatment fidelity. However, it should be noted that no effect size or follow-up data were collected. In addition, teacher and participant perceptions were not assessed, which are critical sources to comprehensively evaluate social validity.

A more recent study conducted by Williams and colleagues (2012) examined the impact of an emailed home note intervention on disruptive behavior in elementary students. Participants included 46 elementary students with disruptive behavior, who were randomly assigned to one of three intervention conditions. Treatment conditions included delayed treatment control, emailed home note, and emailed home note plus performance feedback. In the emailed home note component, parents were asked to email a blank home note to the teacher each evening. Teachers then replied to parents' emails with a completed home note. Based on this feedback, parents applied home-based consequences, which included praise, tangible and social reinforcers, and punishment. All email correspondence was sent to the researcher. In the performance feedback component, parents received feedback regarding compliance with intervention procedures. Teacher ratings indicated moderate acceptability. However, neither parent nor participant acceptability data were collected. In addition, no follow-up data were collected to

measure generalization and maintenance of treatment effects.

Knorr (2015) was the first to evaluate the effectiveness of a Google-based electronic home note intervention for increasing on-task behavior and math performance. Participants included four elementary students at two schools with elevated rates of off-task behavior and lower academic performance as compared to classroom peers. Every day teachers submitted an electronic home note, the results of which were automatically emailed to parents. Parents were asked to review this feedback with their child at home, and were asked to send a reply email confirming that the information had been reviewed. Participants were randomly reinforced based on parent review of the electronic home note. The average effect size for on-task behavior was 2.63, and effects were maintained at a two-week follow-up. Math problem completion increased by 8%, while math accuracy increased by 6%. These effects were maintained at a two-week follow-up. Most teacher electronic home note ratings had significant positive correlations with direct observations. Parents consistently reviewed electronic home note ratings. Parents, teachers, and participants rated the intervention as highly acceptable. However, it is important to note that on-task behavior was not contingently reinforced. The author noted that this was an important area for future research.

The other known electronic home note is the Electronic Daily Behavioral Report Card (e-DBRC) System (Vannest & Burke, 2006). The e-DBRC is a web-based, criterion-referenced system for behavioral progress monitoring (Burke & Vannest, 2008). The e-DBRC uses direct behavior ratings and goal-attainment scales, and progress-monitoring data may be graphically represented (Burke & Vannest, 2008). However, no research has been conducted to assess the utility, effectiveness, or social validity of the

program (Burke & Vannest, 2008).

Purpose of the Study

Off-task behavior is among the most frequently reported classroom behavior challenges (Bowen, Jenson, & Clark, 2004). These behaviors have long-term negative impacts on the learning process both for individual students and the classroom as a whole. For students with elevated off-task behavior, it is critical that research-based interventions be implemented to teach appropriate behavior to increase the likelihood of academic success. The efficacy of home notes has been extensively documented (Atkeson & Forehand, 1979; Kelley, 1990; Vannest et al., 2010; Volpe & Fabiano, 2013). Home notes have been effective to address a range of academic and behavioral issues, in children of all ages, at individual and class levels, and in a variety of settings (Vannest et al., 2010). Home notes are frequently employed in educational settings and are highly acceptable to parents, teachers, participants, and school psychologists. Home notes are efficient, flexible, and nonintrusive interventions that facilitate consistent home-school collaboration and transmit information to parents in an easily interpretable fashion.

Despite these benefits, traditional paper-based home notes may be easily lost, destroyed, or forged. More recently, there has been an interest in web- and technology-based interventions due to increased feasibility, accessibility, and efficiency. The Electronic Daily School Note intervention package is comprised of various research-based innovations, which help eliminate common issues associated with traditional home notes (Knorr, 2015). The Electronic Daily School Note intervention package uses a web-based Google service to automatically send feedback to various parties, and provides an

easy and time-efficient method of home-school communication. The Electronic Daily School Note intervention package automatically stores and graphs progress monitoring data for all target behaviors in real time, facilitating timely data-based decisions.

Knorr (2015) used a Google-based electronic home note to improve parent participation, on-task behavior, and academic performance in elementary students. Results indicated the program was both highly acceptable and effective, and resulted in increased parental involvement. However, on-task behavior was not directly reinforced. Thus, the utility, effectiveness, and acceptability of the intervention warrant further investigation when both on-task behavior and parent review are contingently reinforced.

The purpose of the current study was to replicate and extend Knorr's (2015) research evaluating the effectiveness of an electronic daily school note intervention when both on-task behavior and parent review were contingently reinforced. The study was conducted with four elementary students at one school research site. Teacher ratings on the Electronic Daily School Note were compared with results of direct observation probes to assess the correlation between these measures. Parent, teacher, and participant acceptability of the intervention were also assessed.

RESEARCH QUESTIONS

1. Will participants' rates of on-task behavior be higher than baseline rates of on-task behavior after receiving the Electronic Daily School Note intervention package?
    a. Measured by response discrepancy observation
2. Will participants' rates of on-task behavior after receiving the Electronic Daily School Note intervention package be maintained at a three-week follow-up?
    a. Measured by response discrepancy observation
3. Will participants' rates of on-task behavior after receiving the Electronic Daily School Note intervention package be similar to those of their classroom peers who have not received the Electronic Daily School Note intervention package?
    a. Measured by response discrepancy observation
4. Will teacher ratings of participants' on-task behavior with the Electronic Daily School Note be correlated with participants' rates of on-task behavior as collected via direct observation?
    a. Measured by teacher ratings on the Electronic Daily School Note
    b. Measured by response discrepancy observation
5. Will participants' rates of problem completion on curriculum-based math worksheets be higher than baseline rates of problem completion after receiving the Electronic Daily School Note intervention package?
    a. Measured by performance on curriculum-based math worksheets

6. Will participants' rates of problems completed correctly on curriculum-based math worksheets be higher than baseline problems completed correctly after receiving the Electronic Daily School Note intervention package?
    a. Measured by performance on curriculum-based math worksheets
7. Will parents consistently review Electronic Daily School Note data with their child?
    a. Measured by percentage of parent response emails received by the researcher
8. Will parents report positive ratings regarding participation in the intervention?
    a. Measured by mean responses and narrative feedback on the Parent Intervention Rating Scale
9. Will teachers report positive ratings regarding participation in the intervention?
    a. Measured by mean responses and narrative feedback on the Teacher Intervention Rating Scale
10. Will students report positive ratings regarding participation in the intervention?
    a. Measured by mean responses and narrative feedback on the Child Intervention Rating Scale
11. Will students perceive Reward Days as enjoyable and useful?
    a. Measured by mean responses on the Fun 'O' Meter

METHODS

Participants and Research Site

Participants

Prior to the initiation of any study procedures, written Institutional Review Board approval was obtained from the participating university and the school district where the research took place.

Inclusion Criteria:

1. Participants' primary language was English.
2. Participants were between the third and sixth grades.
3. Participants received math instruction in their general education classroom.
4. Participants were nominated by their general education teacher based on the following criteria:
    a. Participants exhibited lower rates of on-task behavior as compared to their classroom peers.
    b. Participants had lower rates of problem completion and/or accuracy on math assignments as compared to their classroom peers.
5. Participants were on-task 60% or less intervals observed across five independent observation probes in their general education classrooms during an independent math work time.
6. Participants had the ability to complete math assignments by achieving *Highly*

Proficient (4), *Proficient* (3), or *Approaching Proficient* (2) ratings on their most current Student Assessment of Growth and Excellence (SAGE) assessment, if possible (Utah Board of Education, 2013).

7. Participants neither currently received nor had received any known home note intervention involving continuous reinforcement, if possible.

Teachers who showed an interest in study participation were asked to help identify four student participants between the third and sixth grades who displayed lower rates of on-task behavior and math performance as compared to their classroom peers. SAGE assessment data in mathematics were reviewed for each nominated participant to determine if they met study inclusion criteria. SAGE assessments are a form of curriculum-based assessment designed to measure students' progress toward academic proficiency in language arts, math, and science according to the Utah Core Standards (Utah State Board of Education, 2014; Utah State Board of Education, n.d.).

Parents of nominated participants were contacted to obtain initial permission to observe their child for possible study inclusion. Once initial written parental permission was received, the researcher and a research assistant conducted five 15-min direct observation probes using momentary time sampling response discrepancy to confirm that the nominated participants met study inclusion criteria. The researcher then asked each participating teacher to complete the *Behavior Assessment System for Children, 2nd Edition – Teacher Form* (BASC-2-TF) to collect further behavioral information about each participant (Reynolds & Kamphaus, 2004).

Four participants were selected for study participation at the school research site, and are referred to by an assigned number. Study participants were four males, of which

two were in the fourth grade and two were in the fifth grade. One participant received itinerant speech/language services at the time of the study. Of the participants, one student identified as White, one identified as Latino, one identified as Pacific Islander, and one was identified as having mixed ethnicity.

Participant 1 was a fourth grade student. Teacher ratings on the BASC-2-TF indicated Clinically Significant concerns for Atypicality and Functional Communication. Areas falling into the At-Risk range included Attention Problems, Social Skills, Leadership, and Study Skills. Participant 1's parent declined to complete the optional Child Information Questionnaire.

Participant 2 was a fourth grade student. Teacher ratings on the BASC-2-TF indicated no Clinically Significant or At-Risk concerns. According to parent information on the Child Information Questionnaire, Participant 2 had never been diagnosed with a learning or attention disorder and was not taking any medication.

Participant 3 was a fifth grade student. Teacher ratings on the BASC-2-TF indicated Clinically Significant concerns for Hyperactivity, Aggression, and Depression. Areas falling into the At-Risk range included Conduct Problems, Anxiety, Somatization, Attention Problems, Learning Problems, Atypicality, and Study Skills. Participant 3's parent declined to complete the optional Child Information Questionnaire.

Participant 4 was a fifth grade student. He received itinerant speech services for word articulation. Teacher ratings on the BASC-2-TF indicated Clinically Significant concerns for Somatization, Withdrawal, and Social Skills. Areas falling into the At-Risk range included Hyperactivity, Aggression, Depression, Attention Problems, Atypicality, Adaptability, Study Skills, and Functional Communication. According to parent

information on the Child Information Questionnaire, Participant 4 was diagnosed with ADHD and took medication for attention and sleep difficulties.

School Research Site

The study was conducted at one elementary school in a suburban school district in the western United States. The school was a general education public school and offered special education services, dual immersion, and an afterschool program designed to provide additional academic and behavioral supports. The school followed a traditional schedule and was comprised of students in kindergarten through sixth grade. The school had 815 students enrolled, with 87% receiving free or reduced lunch. The student population consisted of 82% minority students with Latino (67%), Pacific Islander (7%), Asian (4%), African American (3%), and American Indian (1%) being the predominant minority groups. Approximately 9% of students received special education services.

All Orientation, Booster, and Reward Day Sessions were conducted in the school psychologist's office. Session components were viewed on a computer screen positioned directly in front of participants, teachers, and parents. All classroom Electronic Daily School Note components and direct observation probes occurred in each participant's respective general education classroom during a predetermined independent math work time. Direct independent observation probes were conducted by either the researcher or a research assistant and were used to measure participant rates of on-task behavior throughout the study, the interobserver reliability, and correlation with teacher ratings on the Electronic Daily School Note. Each direct observation probe was 15 min in duration and was conducted during a predetermined independent math work time.

Dependent Measures

The primary dependent measure was participants' rates of on-task behavior as measured by systematic direct observation probes. Additionally, participants' rates of problem completion and problems completed correctly on curriculum-based math worksheets were used to measure academic performance. Teacher ratings on the Electronic Daily School Note were assessed for their degree of correlation with results of systematic direct observation probes. The percentage of parent response emails received of the total Electronic Daily School Notes submitted was used to determine a parent review percentage. Teacher, parent, and participant feedback on questionnaires, and participant ratings on the Fun 'O' Meter, were used to assess consumer satisfaction and social validity.

Rates of On-Task Behavior

Participant rates of on-task behavior were measured via independent direct observation probes. Each direct observation probe was conducted using a momentary time sampling response discrepancy format. Each observation occurred in each participant's general education classroom during a predetermined independent math work time. Each direct observation probe was 15 min in duration and was comprised of ninety 10-s intervals. Participants were observed alongside a same-sex classroom peer at the end of each 10-s interval. Peer comparisons were conducted systematically in a round-robin format. If the student was observed to be on-task at the end of a 10-s interval, the student was considered *on-task* for that interval. If the student was observed to be off-task at the end of a 10-s interval, the student was considered *off-task* for that interval. Observation

data were recorded on the behavior observation form included in *The Tough Kid Tool Box* (Rhode et al., 2010). A sample observation recording form is included in Appendix C. Behaviors observed, and their corresponding codes and operational definitions, are as follows:

***** = *On-Task:* Eye contact with teacher or task and performing the requested task.

T = *Talking Out/Noise:* Inappropriate verbalization or making sounds with object, mouth, or body.

O = *Out of Seat:* Student fully or partially out of assigned seat without teacher permission.

I = *Inactive:* Student not engaged with assigned task and passively waiting, sitting, etc.

N = *Noncompliance:* Breaking a classroom rule or not following teacher directions within 15 s.

P = *Playing with Object:* Manipulating objects without teacher permission.

Rates of Math Problems Completed and Problems Completed Correctly

Throughout the study, participants were provided with curriculum-based math worksheets, either created with the Math Worksheet Generator on www.interventioncentral.org or taken from *Monitoring Basic Skills Progress: Basic Math, 2nd Edition* (Fuchs, Hamlett, & Fuchs, 1999). Math worksheets contained either 75 or 80 individual math fact problems across three or four separate pages. Teachers helped determine the appropriateness of the math problems to be included on each participant's worksheets.

Participants completed these worksheets throughout all study phases during a predetermined independent math work time of 15 min in duration. The researcher provided these worksheets to each participant's teacher prior to the baseline phase. Each teacher administered a worksheet to the participants every day during the prespecified independent math work time throughout all study phases. At the end of the independent math work time, each participant's curriculum-based math worksheet was collected by the teacher and given to the researcher to determine the number of math problems completed and problems completed correctly. Each day, participants completed a math worksheet with different problems throughout all study phases. A sample page of each type of curriculum-based math worksheet is included in Appendix E. To measure participants' number of math problems completed and problems completed correctly, participants worked on these worksheets exclusively during the predetermined 15-min period each day throughout all study phases.

Correlation Between Teacher Ratings and Direct Observation Data

Each participant's rates of on-task behavior were measured via independent direct observation probes conducted by the researcher or a research assistant. Teacher ratings on the Electronic Daily School Note were assessed for their degree of correlation with results of direct observation probes during the intervention phase.

Parent Review Percentage

During the intervention phase, the researcher determined the percentage of total Electronic Daily School Notes reviewed by parents as indicated by parent response.

Using Knorr's (2015) description, a parent response was defined as *an email sent to the researcher by the parent indicating their review of Electronic Daily School Note data with their child.* A parent response sent prior to the following school day was considered *received.* A parent response not sent before the following school day was considered *not received.*

Consumer Satisfaction and Social Validity

Questionnaires were used to determine teacher, parent, and participant satisfaction with and degree of social validity of the Electronic Daily School Note intervention. There were separate questionnaires for teachers, parents, and students. Teacher and parent questionnaires consisted of 25 statements adapted from Knorr (2015) and the *Behavior Intervention Rating Scale* (Elliott & Treuting, 1991). The participant questionnaire consisted of eight statements adapted from Knorr (2015) and the *Children's Intervention Rating Profile* (Elliott, 1986). Statements were rated on a six-point Likert-type scale, which ranged from *strongly disagree* to *strongly agree*. Teacher, parent, and student questionnaires also contained four open-ended questions designed to allow each rater to more freely convey their perceptions about the intervention. Each teacher, parent, and student completed a corresponding questionnaire on the last day of the intervention phase. Samples of the teacher, parent, and student questionnaires are located in Appendix B.

The Fun 'O' Meter (Jenson & Sprick, 2014) was used to evaluate the degree to which participants perceived each Reward Day as enjoyable and useful. Participants rated the Fun 'O' Meter at the end of each Reward Day, and these ratings were used to monitor participant perceptions about the intervention. An example of the Fun 'O' Meter is

located in Appendix D.

Research Design

A nonconcurrent multiple-probe, multiple-baseline design (Baer, Wolf, & Risley, 1968; Cuvo, 1979; Horner & Baer, 1978) was used to evaluate the effectiveness of the Electronic Daily School Note intervention. A multiple-probe design involves the collection of intermittent probes to evaluate intervention effectiveness when continuous data collection is impractical or unnecessary (Horner & Baer, 1978). A multiple-probe design helps control behavior reactivity and extinction effects inadvertently caused by the constant presence of the researcher collecting data (Horner & Baer, 1978). A multiple-baseline design staggers the initiation of baseline and intervention phases for participants, reducing threats to internal validity that may be present if all participants begin the intervention phase at the same time (Kazdin & Kopel, 1975).

The baseline phase was seven to 12 days in duration, and five structured direct observation probes were conducted for each participant. The intervention phase was between 20 to 24 days in duration, and either seven or eight structured direct observation probes were conducted for each participant. The follow-up phase was five days in duration, and three structured direct observation probes were conducted for each participant. Observation probes occurred immediately before and after initiation of the intervention phase and any intervention phase change, if possible. All remaining observation probes were conducted at random using a predetermined observation schedule. Of the total number of observation probes conducted across study phases, 38% were assessed for interobserver reliability.

Materials

Observation Training Video

An observation training video created by Knorr (2015) was used to establish interobserver reliability between the researcher and a research assistant. The observation video was approximately six minutes in duration and depicted a sixth grade general education classroom during an independent math work time. The video showed three male and two female students engaged in independent math work. The depicted students were on-task approximately 80% of the time.

Electronic Daily School Note

An Electronic Daily School Note was used throughout the intervention phase. The Electronic Daily School Note is a Google Form resembling a traditional, paper-based home note (Knorr, 2015). The Electronic Daily School Note was designed following guidelines established by Knorr (2015), Cooper (2010), and Chafouleas, Christ, and Riley-Tillman (2009). An example Electronic Daily School Note is included in Figure 1 and Appendix G. The Electronic Daily School Note was designed for teachers to rate up to three target behaviors for each participant. Each target behavior was rated on an eleven-point Likert-type scale ranging from *Never (0%)* to *Always (100%)*. Each Electronic Daily School Note included the participant's name, the corresponding parent's email address, an *On-Task* behavior rating scale, rating scales for two optional behaviors selected by the teacher, operational definitions for each target behavior, and a comments section. The comments section was intended for teachers to provide parents with narrative feedback and information about assigned homework. With researcher assistance,

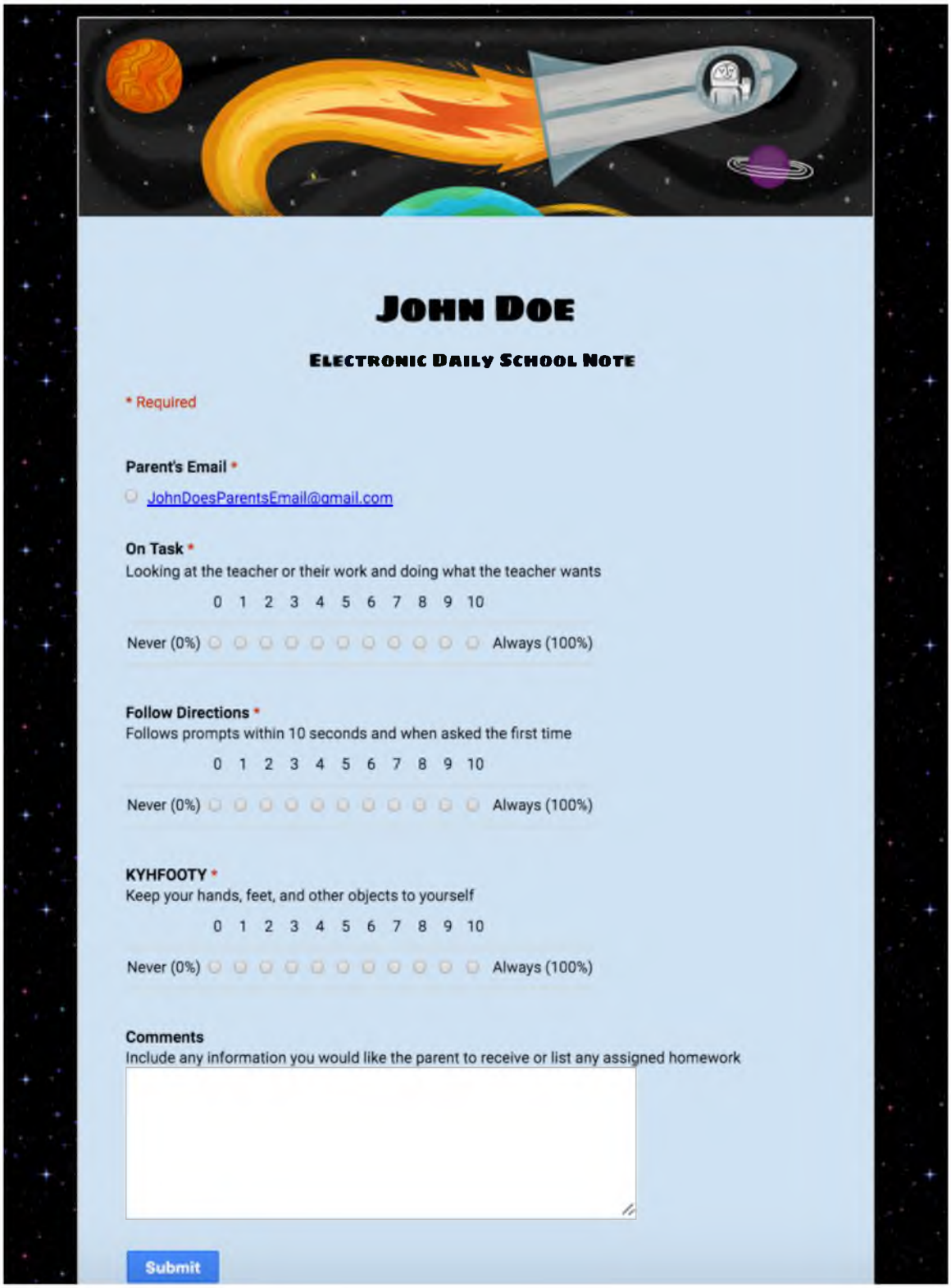


Figure 1. Example Customized Electronic Daily School Note

participants were encouraged to customize their Electronic Daily School Note's design by selecting from various color schemes, themes, and background pictures.

Upon submission, teacher ratings and comments on the Electronic Daily School Note were automatically emailed to the participant's parent email address and compiled in a corresponding Google Sheet, an Excel-type spreadsheet accessible only to the researcher and research assistants. For each submitted Electronic Daily School Note, a timestamp, the teacher's rating for each behavior, and all teacher comments were automatically saved in the corresponding Google Sheet. Behavior ratings stored in the corresponding Google Sheet were also automatically graphed on a line chart. An example Google Sheet and line chart with behavioral ratings are included in Figures 2 and 3.

Reward Day Notifications

During the intervention phase, the researcher used Reward Day Notifications to inform parents about the occurrence of Reward Days and randomly reinforce their review of the Electronic Daily School Note. Reward Day Notifications were emails automatically sent to parents via a vacation responder. An example Reward Day

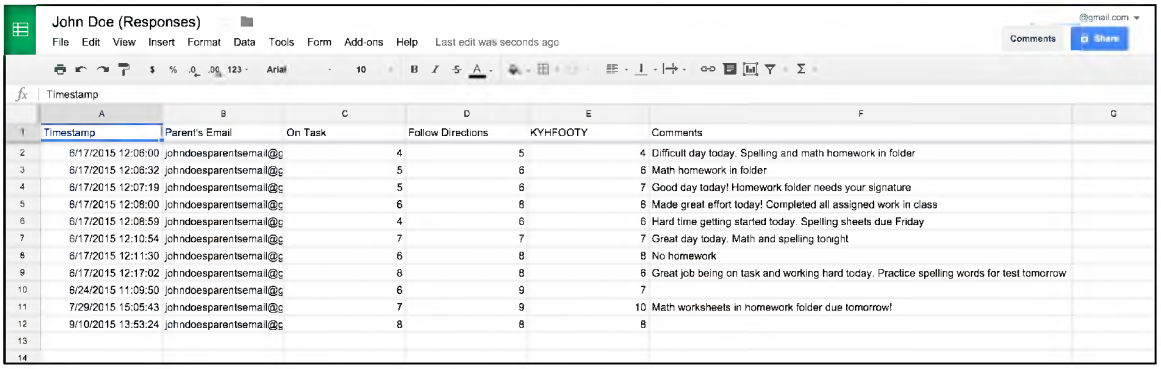


Figure 2. Example Electronic Daily School Note Ratings Within a Google Sheet

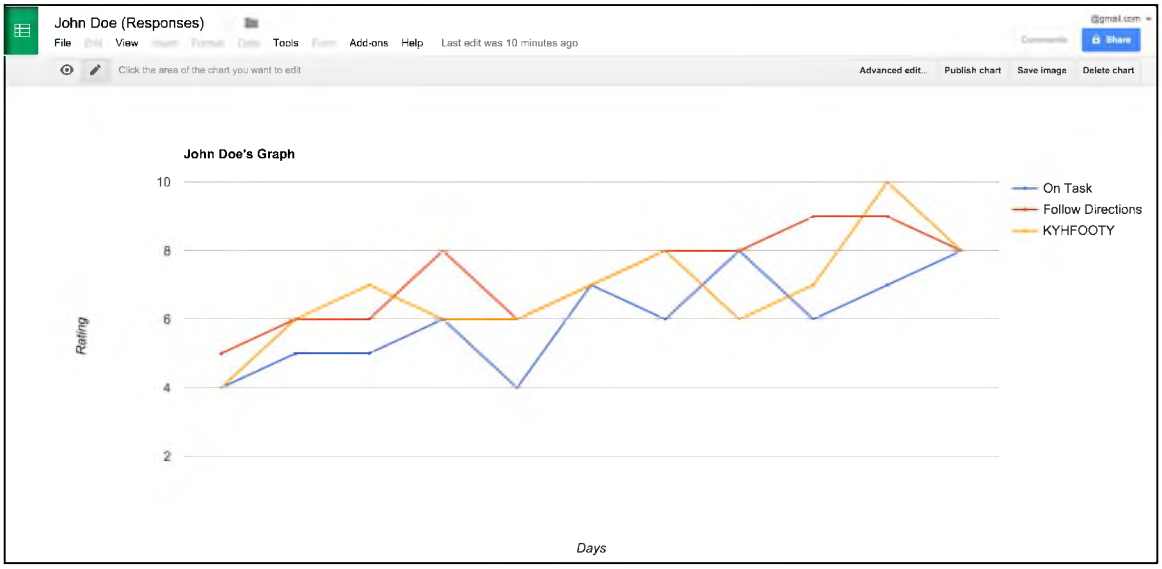


Figure 3. Example Electronic Daily School Note Ratings Line Chart

Notification is included in Figure 4 and Appendix H.

During the intervention phase, the researcher set Reward Day Notifications randomly an average of three times per week, following a variable ratio reinforcement schedule of three (VR-3). The occurrence of Reward Day Notifications corresponded with a predetermined Reward Day schedule. Reward Day Notifications were only sent upon the receipt of a parent response email, which indicated their review of the Electronic Daily School Note with their child.

The researcher set Reward Day Notifications according to Knorr's (2015) guidelines. Reward Day Notifications were set with the Gmail account used for the Electronic Daily School Note intervention by clicking *Settings*, and clicking the *Vacation Responder On* button. The researcher entered *Reward Day Tomorrow* in the subject line and included the following text in the message body:

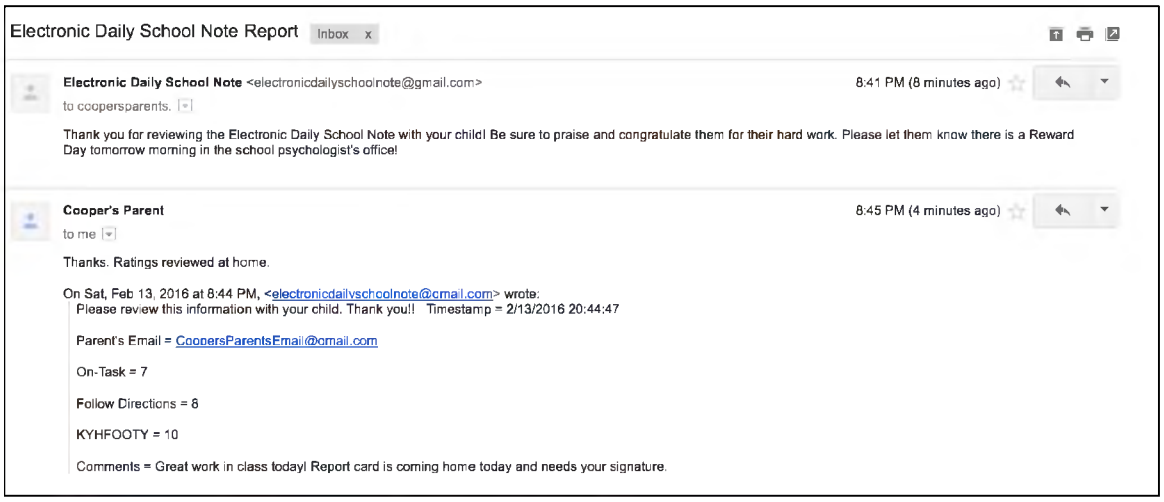


Figure 4. Example Reward Day Notification

> *Thank you for reviewing the Electronic Daily School Note with your child! Be sure to praise and congratulate them for their hard work. Please let them know there is a Reward Day tomorrow morning in the school psychologist's office!*

Curriculum-Based Math Worksheets

Curriculum-based math worksheets were used to measure participants' rate of math problems completed and problems completed correctly. During the Teacher Orientation Session, the teacher helped determine the appropriateness of math problems included on each participant's worksheets. Based on the teacher consultation, 36 different worksheets were generated for each participant either using the Math Worksheet Generator located on www.interventioncentral.org or *Monitoring Basic Skills Progress Basic Math, 2nd Edition* (Fuchs, Hamlett, & Fuchs, 1999). Math worksheets contained either 75 or 80 individual math fact problems across either three or four pages. A sample page of each type of curriculum-based math worksheet is in Appendix E.

Rewards Menu and Reward Spinner

The Rewards Menu contained a list of six items numbered from *1* to *6*. A seventh item was created and one of the reinforcers was labeled *Mystery Motivator*. Participants had the opportunity to earn items listed on the Rewards Menu during Reward Days. During each Participant Orientation Session, each participant selected the rewards to be included on their Rewards Menu. Each participant chose six items from a list of 10 possible reinforcers. The Rewards Menu was used in conjunction with the Reward Spinner.

The Reward Spinner (Jenson, Rhode, & Reavis, 2009) was comprised of seven wedges of various sizes numbered from *1* to *7*. The name of each reward listed on each participant's Rewards Menu was written next to each corresponding number. During each Reward Day, each participant had the opportunity to earn spins on the Reward Spinner. When a participant earned a spin on the Reward Spinner, the participant spun the arrow and was given whichever reinforcer the arrow landed on. An example of the Reward Spinner and Rewards Menu are located in Appendix I.

Mystery Motivator

The Mystery Motivator is a highly desirable reinforcer, the name of which is written on a slip of paper and placed in a sealed envelope (Jenson et al., 1995). The envelope is then decorated with question marks and prominently displayed. The reinforcer contained within the envelope is unknown or remains a mystery to participants. A Mystery Motivator was listed on each participant's Reward Menu, which corresponded with a smaller wedge on the Reward Spinner. Participants were told that the Mystery

Motivator envelope contained a highly desirable reward to increase their anticipation and motivation to earn a spin on the Reward Spinner. Each time a Mystery Motivator was earned, a new Mystery Motivator was listed and placed in the envelope.

Chart Moves Board

Chart Moves involves the use of a dot-to-dot picture or linked chart, which determines the occurrence of reinforcement and allows students to monitor their own progress (Jenson, Rhode, & Reavis, 2009). Each time certain criteria are met, the student may complete another portion of the chart. The student earns a predetermined reinforcer each time a special reward dot is reached. Reward dots are randomly marked on the chart with the invisible-ink side of a Crayola Color Switchers marker. When colored with the developer side of a Crayola Color Switchers marker, the invisible ink is revealed to indicate a reward dot. A larger reward is earned when the picture or chart is completed.

The Chart Moves Board was used in conjunction with the Reward Spinner. The Chart Moves Board was comprised of diagonally bisected squares on a single page arranged in a game board type fashion. During the Participant Orientation Session, each participant selected a large reinforcer to be earned if the chart was completed. Each participant was able to choose one item from a list of three possible highly desirable reinforcers. The name of the large reward to be earned was listed on each participant's Chart Moves Board next to the chart end point.

Square halves were randomly marked with reward dots using the invisible-ink side of a Crayola Color Switchers marker. Each reward dot signified one available spin on the Reward Spinner. The occurrence of reward dots followed a VR-3 schedule with a

50% reinforcement rate. Of every six square halves (comprising three total squares), 50% were randomly marked with Reward Dots.

During each Reward Day, each participant had the opportunity to color in one full square (two square halves) on the Chart Moves Board using the developer side of a Crayola Color Switchers marker. Each participant was allowed to color in the right square half if their last teacher rating on the Electronic Daily School Note was at or above their on-task goal. Each participant was allowed to color in the left square half if they reviewed the Electronic Daily School Note data with a parent, as indicated by a received parent response from the previous day. Participants were only allowed to color in square halves for each criterion that was met. Participants were required to have at least one square half colored in before moving on to the next square. Participants completed the Chart Moves Board, and therefore earned the large reinforcer, if they met at least one criterion on 80% of Reward Days. An example Chart Moves Board is located in Figure 5 and Appendix J.

Treatment Fidelity Checklists

The researcher used fidelity checklists adapted from Knorr (2015) to maintain treatment integrity during all Orientation, Booster, and Reward Day Sessions throughout the study. These checklists listed each step to be taken by the researcher, research assistant, teachers, parents, and/or participants during each corresponding session. The researcher and research assistants checked off each step as it was completed. A separate checklist was used for each teacher, parent, and participant during each corresponding session. A sample of each fidelity checklist is located in Appendix F.

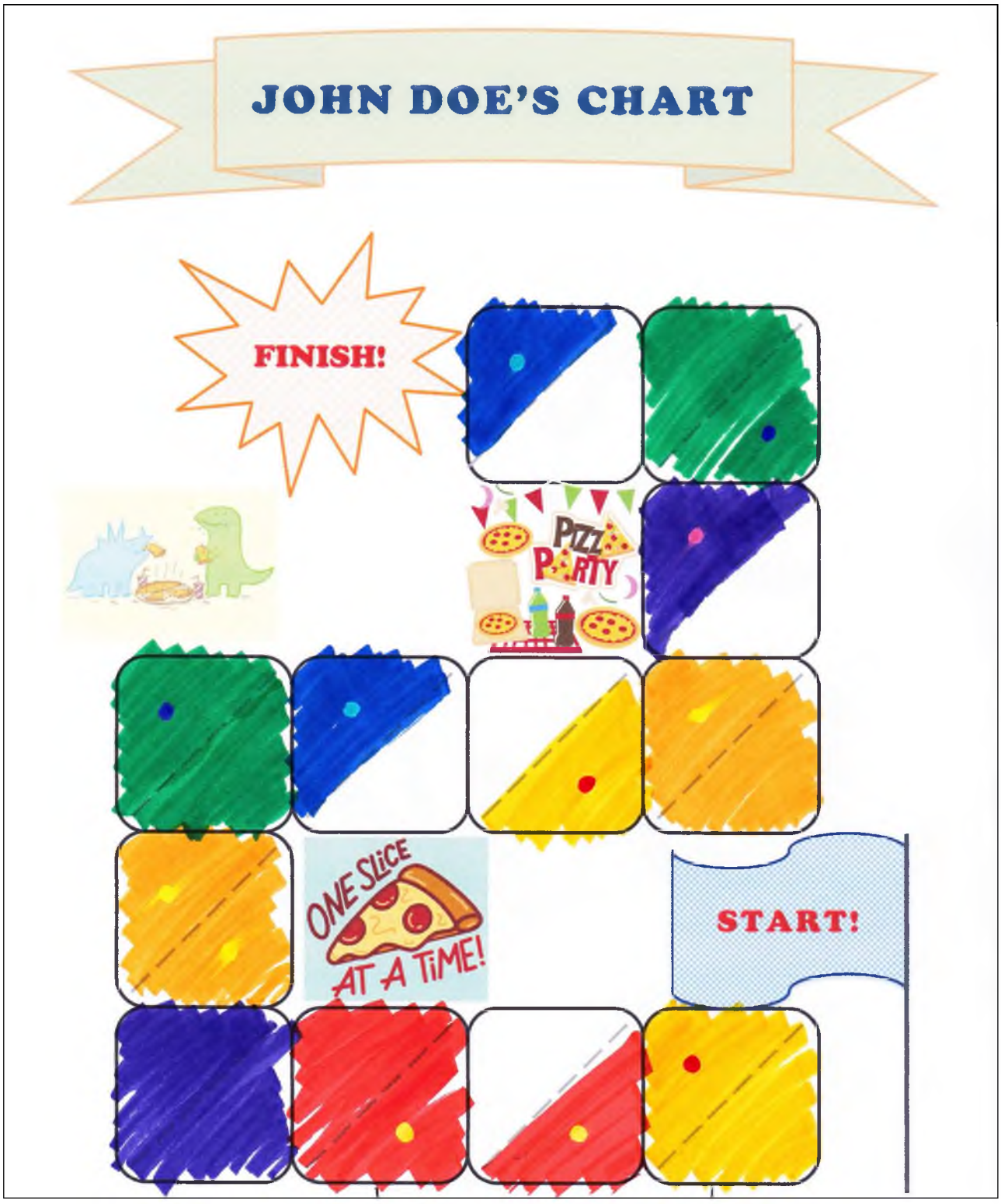


Figure 5: Example Chart Moves Board

Procedures

Observer Training and Interobserver Reliability

The researcher enlisted the help of one research assistant to conduct direct observation probes. To ensure interobserver reliability, the research assistant engaged in an observation training session. During the training session, the researcher reviewed with the research assistant the definitions of on- and off-task behaviors included on the observation form from the *Tough Kid Tool Box* (Rhode et al., 2010). The research assistant watched the observation training video and practiced performing direct observations using a momentary time sampling response discrepancy format. Practice systematic direct observations were repeated until the research assistant became fluent with the observation procedure and a minimum Cohen's Kappa of .80 was achieved.

To ensure interobserver reliability, the researcher and the research assistant simultaneously conducted independent direct observation probes for 38% of the total direct observation probes across all study phases for all participants using a predetermined observation schedule. Each of these direct observation probes were conducted in participants' respective classrooms while they engaged in independent work on individualized curriculum-based math worksheets. Both Cohen's Kappa and an agreement plus disagreement model were calculated for each simultaneous observation.

Orientation Sessions

Teacher orientation session. Before the baseline phase, the researcher conducted an initial orientation meeting with each teacher following guidelines adapted from Knorr (2015). The researcher conducted these orientation meetings on an individual basis with

each teacher. Teachers were informed that each participant's parents would also be involved in the intervention, as they would be able to review their child's Electronic Daily School Note feedback every day. Teachers were also informed that participants would be randomly reinforced for meeting an on-task goal and reviewing the Electronic Daily School Note ratings with their parent. Each teacher was then able to select two optional behaviors to be monitored throughout the intervention phase. Next, the researcher trained the teacher about how to use the Electronic Daily School Note by having them:

1. Access the webpage for each of their participants' Electronic Daily School Note.
2. Select the participants' parent email address.
3. Select a sample rating for each target behavior.
4. Write a sample comment in the Comments section.
5. Submit the Electronic Daily School Note.
6. View previous ratings summary.

After submitting sample Electronic Daily School Note ratings, the researcher showed the teacher an example of the data stored in the Google Sheet for each corresponding participant. Teachers were then informed about what information parents would receive based on their Electronic Daily School Note ratings and comments. The researcher then instructed the teacher to bookmark the webpage associated with the corresponding participant's Electronic Daily School Note for convenient daily access.

Teachers then learned the definition of on-task behavior and watched the previously described observation training video. At the end of the video, teachers were

asked to provide a rating for the depicted student's on-task behavior as if they were using the Electronic Daily School Note. This rating was then compared with results obtained via direct observation as part of the observer training; direct observation results were rounded to the nearest ten (e.g., direct observation data of 73% would equate a rating of *7* on the Electronic Daily School Note). Further teacher training occurred if the teacher's rating differed from the rounded direct observation results by more than two points on the Electronic Daily School Note. The additional teacher training included replaying the observation training video and detailed discussion of on- and off-task behavior shown by the depicted student. The teacher was then informed that they would be notified if their on-task Electronic Daily School Note rating differed from results of direct observation by more than two points. However, both teachers' initial ratings fell within two points of the rating made by the researcher and therefore no additional training was necessary.

Next, the researcher and the teacher reviewed each corresponding participant's SAGE assessment data and in-class math abilities to create each participant's curriculum-based math worksheets. At the conclusion of the orientation session, the researcher reviewed the Teacher Consent Form, which invited consent for study participation and provided additional study information. The researcher then answered any teacher questions or addressed any teacher concerns. Upon receiving teacher consent for study participation, the researcher gave the teacher the BASC-2-TF to complete for their corresponding participants. The researcher used the Teacher Orientation Session Checklist, located in Appendix F, to ensure that these sessions were conducted with fidelity.

Following the Teacher Orientation Session, the researcher created a set of

curriculum-based math worksheets for each participant and gave these to the teacher. Immediately after the baseline phase, the researcher informed the teacher of the participant's initial on-task percentage goal of 70%. The researcher informed the teacher that the participant's goal would increase to 80% after meeting the initial goal three consecutive days via teacher ratings on the Electronic Daily School Note.

Parent orientation session. Before each participant entered the intervention phase, the researcher conducted an initial orientation with each parent following guidelines adapted from Knorr (2015). The researcher conducted these orientation meetings on an individual basis with each parent. During the orientation, parents were informed that their child's behavior would be rated by their teacher during an independent math work time. Parents were informed that they would be involved in the intervention and would be able to review their child's Electronic Daily School Note feedback every day. The researcher showed the parent an example Electronic Daily School Note and an example of the data collected and stored in the corresponding Google Sheet.

The researcher then showed the parent a Reward Day Notification and the parent learned that these notifications would be sent the day prior to a Reward Day and only after the researcher received a parent response email. The researcher coached the parent on how to review the Electronic Daily School Note with their child using only positive feedback. The researcher also demonstrated how to send a parent response email to indicate their review of the Electronic Daily School Note with their child. In addition, the researcher coached the parent on how to inform their child about the occurrence of Reward Days after receiving a Reward Day Notification. The researcher informed the parent of their child's initial on-task goal of 70% and that their child's goal would

increase to 80% after meeting the initial goal three consecutive days via teacher Electronic Daily School Note ratings.

At the conclusion of the Parent Orientation Session, the researcher asked the parent to review the steps to complete their Electronic Daily School Note intervention responsibilities. The researcher asked each parent to refrain from providing their child with tangible reinforcers contingent on their Electronic Daily School Note ratings, as these would be provided at school during Reward Days. The researcher used the Parent Orientation Session Checklist, located in Appendix F, to ensure that these sessions were conducted with fidelity.

Next, the researcher reviewed the Parent Consent Form. The Parent Consent Form invited consent for parent and child study participation and provided additional study information. The researcher answered any parent questions or addressed any parent concerns. The researcher invited the parent to complete the voluntary Child Information Questionnaire to gather additional information about their child.

Participant orientation session. Before each participant entered the intervention phase, the researcher conducted an initial orientation with each participant following guidelines adapted from Knorr (2015). The researcher conducted these orientation meetings on an individual basis with each participant. During the orientation, participants learned that their teacher would monitor their behavior during an independent math work time.

Participants then watched a five-minute instructional video describing on-task behavior (Jenson & Sprick, 2014). At the end of the video, participants were asked to define on-task behavior according to the instructional video. If the participant did not

correctly define on-task behavior, the researcher provided the correct definition, asked the participant to repeat it back, replayed the instructional video, and again asked for the appropriate definition of on-task behavior.

Next, the researcher showed the participant an example Electronic Daily School Note to and an example of the data collected and stored in the corresponding Google Sheet. The researcher informed the participant of their initial on-task goal of 70% and that their goal would increase to 80% after meeting the initial goal on three consecutive days via teacher ratings on the Electronic Daily School Note. With assistance from the researcher, each participant was encouraged to customize their Electronic Daily School Note's design by selecting from various color schemes, themes, and background pictures.

Next, the researcher introduced the participant to the Rewards Menu, Reward Spinner, Mystery Motivator, Chart Moves Board, and Reward Days. Each participant chose six of ten possible items to be included on their personalized Rewards Menu. Each participant chose one of three possible large items to be included on their Chart Moves Board. Participants were then allowed to make one spin on the Reward Spinner and obtain a reward on their Rewards Menu. The researcher used the Participant Orientation Session Checklist, located in Appendix F, to ensure that these sessions were conducted with fidelity.

The researcher then reviewed the Participant Assent Form. The Participant Assent Form invited an agreement to participate in the study and provided additional, age-appropriate study information. The researcher answered any participant questions or addressed any participant concerns.

Study Phases

Baseline phase. Five direct observation probes were collected for each participant using a momentary time sampling response discrepancy format. Of the total number of independent observation probes conducted during the baseline phase, 40% were assessed for interobserver reliability. These observation probes occurred on random days during an independent math work time. Every day, each participant was provided with a curriculum-based math worksheet generated from either the Math Worksheet Generator on www.interventioncentral.org or *Monitoring Basic Skills Progress Basic Math, 2nd Edition* (Fuchs, Hamlett, & Fuchs, 1999). Teachers prompted each participant to work on their math worksheet during the independent math work time without providing specific instructions.

Each worksheet contained either 75 or 80 individual math fact problems across either three or four pages. Participants worked exclusively on these worksheets for the duration of each 15-min baseline observation. After each direct observation probe, each participant's curriculum-based math worksheets were collected by the teacher and given to the researcher to be scored. The collected baseline data were not shared with teacher, parents, or participants prior to the conclusion of the study. Five baseline observation probes were collected across 7 days for Participant 1, across 8 days for Participant 2, across 10 days for Participant 3, and across 12 days for Participant 4. The transition from the baseline phase to the intervention phase was contingent on the relative stability of each participant's obtained baseline data.

Following the baseline phase, the researcher met with each teacher to review the initial on-task percentage goal of 70% for each participant. During the Participant

Orientation Session, each participant was informed of his or her initial on-task goal of 70%. The researcher informed the participant that their goal would increase to 80% after meeting the initial goal on three consecutive days via teacher ratings on the Electronic Daily School Note.

Intervention phase. During the intervention phase, teachers rated their participants' classroom behavior using the Electronic Daily School Note. Teacher ratings on the Electronic Daily School Note were based solely on the participant's behavior during the designated independent math work time of 15 min in duration. Participants worked exclusively on a curriculum-based math worksheet for the duration of the designated independent math work time each day of the intervention phase. As in the baseline phase, each participant completed the worksheet for the duration of each 15-min observation probe. Each day of the intervention phase, participants' curriculum-based math worksheets were collected and scored by the researcher and a research assistant. Teachers were asked to complete the Electronic Daily School Note observation ratings following the independent math work time. Teacher ratings and comments were automatically embedded within a Google Sheet and line chart corresponding to each participant's Electronic Daily School Note. Teacher ratings and comments were also automatically emailed to each participant's parent email address every day.

The intervention phase was 24 days for Participant 1, 23 days for Participant 2, 21 days for Participant 3, and 20 days for Participant 4. The researcher and a research assistant conducted eight independent observation probes for Participants 1 and 2. The researcher and a research assistant conducted seven independent observation probes for Participants 3 and 4. Of the total number of independent observation probes conducted

during the intervention phase for all participants, 41% were assessed for interobserver reliability. All observations occurred during the predetermined independent math work time. To ensure that independent observation probes for each participant were collected in a randomized manner, an observation schedule was created prior to study initiation.

Immediately following teacher submission of the Electronic Daily School Note, parents automatically received the Electronic Daily School Note data via email. After receiving these data, parents were asked to review the information with their child and send a response email to the researcher. The parent response email was an indication to the researcher that the parent reviewed the Electronic Daily School Note data with their child.

During the intervention phase, the researcher randomly set Reward Day Notifications an average of three times per week. These notifications were automatically sent upon receipt of each parent's response email indicating their review of the Electronic Daily School Note. The researcher set a Reward Day Notification the day before a Reward Day was scheduled to occur.

Reward Days occurred randomly following a predetermined schedule so that each participant received an approximately equivalent proportion of Reward Days to their total days in the intervention phase. To ensure that a schedule for each participant was conducted in a randomized manner, the researcher created a schedule prior to the intervention phase. The schedule consisted of approximately three Reward Days per week across the intervention phase for each participant.

Follow-up phase. The follow-up phase began three weeks following the end of the intervention phase and was five days in duration for all participants. No Electronic

Daily School Note or Reward Days were implemented during this time. Using the same observation format employed during the baseline and intervention phases, three direct observation probes were conducted for each participant according to a predetermined schedule. Of the total number of independent observation probes conducted during the follow-up phase, 33% were assessed for interobserver reliability. As with the baseline and intervention phases, direct observation probes were 15 min in duration and occurred while participants completed curriculum-based math worksheets during an independent math work time. After each direct observation probe, each participant's curriculum-based math worksheets were collected by the teacher and given to the researcher to be scored.

Reward Days

The researcher enlisted the help of two research assistants to conduct Reward Days. For each participant, Reward Days were conducted either by the researcher or an assigned research assistant. Each Reward Day was approximately five minutes in duration. Reward Days occurred randomly an average of three times per week throughout the intervention phase. Reward Days occurred following a predetermined schedule so that each participant received an approximately equivalent proportion of Reward Days to their total number of days in the intervention phase. Participants were reinforced according to a VR-3 schedule with a 50% reinforcement rate. A Reward Day Notification was sent to parents the day before a Reward Day was scheduled to occur. A Reward Day Notification was only sent if a parent response email was received indicating their review of Electronic Daily School Note data.

It is important to note that Reward Days were available to all participants

regardless of whether a parent response email was received. If a parent response email was not received, participants had a reward opportunity for meeting their on-task goal, but did not have a reward opportunity for parent review of the Electronic Daily School Note. During each Reward Day, participants:

1. Reviewed their teacher Electronic Daily School Note ratings on the corresponding Google Sheet since the last Reward Day.
2. Reviewed any comments made by the teacher since the last Reward Day.
3. Determined whether their last Electronic Daily School Note rating met or exceeded their on-task goal.
    a. Using a Crayola Color Switchers marker, colored in the right square half on the Chart Moves Board if their most recent teacher Electronic Daily School Note rating met or exceeded their on-task goal.
    b. Reviewed on-task behavior with the researcher or research assistant if their last Electronic Daily School Note rating fell below their on-task goal.
4. Were informed whether the researcher received a parent response email indicating their review of the Electronic Daily School Note.
    a. Using a Crayola Color Switchers marker, colored in the left square half on Chart Moves Board for having parent review of the Electronic Daily School Note as indicated by a received parent response email.
5. Determined the number of reward dots revealed on the Chart Moves Board since the last Reward Day.
6. Made spins on the Reward Spinner according to the number of reward dots

revealed on the Chart Moves Board since the last Reward Day.

7. Reviewed whether they met their on-task goal on three consecutive days since the last Reward Day.
    a. Increased their on-task goal to 80% if they met their goal on three consecutive days since the previous Reward Day, or
    b. Maintained their goal at 70% if they had not met their goal on three consecutive days since the previous Reward Day.
8. Rated the Fun 'O' Meter to indicate their perceptions of Reward Day enjoyment and degree of helpfulness.

The researcher and research assistants used the Reward Day Checklist (Appendix F) to ensure that these sessions were conducted with fidelity.

Booster Sessions

Teacher booster session. At the beginning of the second week of the intervention phase, the researcher conducted a Teacher Booster Session following guidelines adapted from Knorr (2015). The researcher met with each participant's teacher and verbally reviewed the steps to complete the Electronic Daily School Note. The researcher used the Teacher Booster Session Checklist (Appendix F) to ensure that these sessions were conducted with fidelity.

Parent booster session. At the beginning of the second week of the intervention phase, the researcher conducted a Parent Booster Session following guidelines adapted from Knorr (2015). The researcher contacted each participant's parent via telephone to verbally review the steps to complete the Electronic Daily School Note intervention. The

researcher used the Parent Booster Session Checklist (Appendix F) to ensure that these sessions were conducted with fidelity.

Data Analysis

Rates of On-Task Behavior

Rates of on-task behavior were collected via independent direct observation probes conducted throughout study phases. The percentage of time each participant was on-task was calculated by dividing the number of intervals rated as on-task by the total number of intervals observed. Additionally, data were graphed for visual analysis of each participant's rates of on-task across study phases.

Rates of Math Problems Completed and Problems Completed Correctly

Each participant completed curriculum-based math worksheets during an independent math work time throughout study phases. Each participant's average rate of problem completion and problems completed correctly on these worksheets was calculated for each study phase. These data were graphed for visual analysis of each participant's rates of math problems completed and problems completed correctly across study phases.

Effect Size

Tau-U. An effect size was calculated for each participant using Tau-U, developed by Parker and colleagues (2011), a distribution free nonparametric method combining Kendall's Tau and Mann-Whitney U. Tau-U includes a summary index, which represents

overall improvement when controlling for baseline trend. Tau-U is unaffected by ceiling effects, which is a limitation of simpler nonverlap methods (Parker et al., 2011). According to benchmarks put forth by Vannest and Ninci (2015), a Tau-U value of .19 and below may be considered small, .20 to .60 may be considered moderate, .60 to .80 may be considered large, and .81 and above may be considered very large, depending on the context. A separate Tau-U effect size was calculated for each participant for on-task behavior, math problem completion, and math problem accuracy across study phases.

Improvement rate difference. An effect size was calculated for each participant using Parker, Vannest, and Brown's (2009) improvement rate difference. IRD is a recommended and widely used index in evidence-based medicine, though referred to as *risk reduction* or *risk difference* (Parker, Vannest, & Brown, 2009). Notable advantages of IRD include the simplicity of calculation, similarity with percentage of non-overlapping data and visual analysis, and wide applicability to single-case research designs (Parker, Vannest, & Brown, 2009). According to benchmarks put forth by Vannest and Ninci (2015), an IRD value of .50 and below may be considered small, .51 to .69 may be considered moderate, and .71 and above may be considered large, depending on the context. A separate IRD effect size was calculated for each participant for on-task behavior, math problem completion, and math problem accuracy across study phases.

Correlation Between Teacher Ratings and Direct Observation Data

Each participant's rates of on-task behavior were measured via independent direct observation probes conducted by the researcher or a research assistant. During the

intervention phase, direct observation probes were conducted for 34% of total teacher ratings on the Electronic Daily School Note for all participants using a predetermined observation schedule. These observation probes occurred simultaneously with teacher observations using the Electronic Daily School Note. The degree of correlation between these data was assessed using a Pearson Product-Moment Correlation Coefficient (Rogers & Nicewander, 1988). One coefficient, assessing all comparisons throughout the intervention phase, was calculated for each participant. A second coefficient, assessing all comparisons throughout the intervention phase for both participants, was calculated for each classroom teacher.

Parent Review Percentage

During the intervention phase, the researcher recorded the number of *parent responses* received. A parent review percentage was calculated for each parent by dividing the number of parent responses received by the total number of Electronic Daily School Notes submitted by the teacher.

Consumer Satisfaction and Social Validity

Questionnaires were used to determine teacher, parent, and participant satisfaction with and degree of social validity of the Electronic Daily School Note intervention. A mean rating was calculated for each statement on each questionnaire. Open-ended question responses were reported in narrative form. The Fun 'O' Meter was used to determine the degree to which participants perceived each Reward Day as enjoyable and useful. A mean rating was calculated for each participant's total ratings.

RESULTS

The purpose of the current study was to extend Knorr's (2015) research to evaluate the effectiveness of an Electronic Daily School Note intervention package to improve on-task behavior, academic performance, and home-school collaboration with the addition of a direct reinforcement component. While Knorr (2015) directly reinforced parent review of behavioral data, the current study directly reinforced both on-task behavior and parent review. The Electronic Daily School Note intervention package was implemented with four student participants and their parents and teachers at one public elementary school. The following data were obtained for each research question.

Research Questions

Question 1: Will Participants' Rates of On-Task Behavior Be Higher Than Baseline Rates of On-Task Behavior After Receiving the Electronic Daily School Note Intervention Package?

The average baseline rate of on-task behavior for all participants was 40% according to independent direct observation probes during an independent math work time. During the intervention phase, the average rate of on-task behavior was 73%, which represents a 33% increase in on-task behavior from the baseline phase across all study participants. For all participants, the average baseline to intervention Tau-U for all participants was .90 and the average baseline to intervention IRD was .88. These effect

sizes represent a 90% and 88% data improvement across phases, respectively. See Tables 1 and 2 for the differential effects for each participant. Three of four participants increased their on-task goal from 70% to 80% during the intervention phase. See Figure 6 for participant rates of on-task behavior throughout study phases (note that asterisks indicate an increase in participants' on-task goal of 70% to 80% on the Electronic Daily School Note).

Participant 1's rate of on-task behavior was observed to be 46% during the baseline phase. During the intervention phase, Participant 1's rate of on-task behavior was 76%, which represents a 30% increase from baseline. For on-task percentage, Participant 1's baseline to intervention Tau-U was 1.0 and his baseline to intervention IRD was 1.0.

Participant 2's rate of on-task behavior was observed to be 48% during the baseline phase. During the intervention phase, Participant 2's rate of on-task behavior was 80%, which represents a 32% increase from baseline. For on-task percentage, Participant 2's baseline to intervention Tau-U was 1.0 and his baseline to intervention IRD was 1.0.

Participant 3's rate of on-task behavior was observed to be 22% during the baseline phase. During the intervention phase, Participant 3's rate of on-task behavior was 63%, which represents a 41% increase from baseline. For on-task percentage, Participant 3's baseline to intervention Tau-U was .83 and his baseline to intervention IRD was .80.

Participant 4's rate of on-task behavior was observed to be 45% during the baseline phase. During the intervention phase, Participant 4's rate of on-task behavior

Table 1.

On-Task Percentages for All Participants Across Baseline and Intervention Phases

Participant	Baseline	Intervention & Change from Baseline
1	46%	76% (+30%)
2	48%	80% (+32%)
3	22%	63% (+41%)
4	45%	73% (+28%)
Total Average	40%	73% (+33%)

Table 2.

Baseline to Intervention Effect Sizes for On-Task Percentage

Measure	Participant 1	Participant 2	Participant 3	Participant 4	Total
Tau-U	1.0	1.0	.83	.74	.90
IRD	1.0	1.0	.80	.71	.88

was 73%, which represents a 28% increase from baseline. For on-task percentage, Participant 4's baseline to intervention Tau-U was .74 and his baseline to intervention IRD was .71.

All participants showed a large increase in their level of on-task behavior during the intervention phase as compared to baseline. Three participants exceeded their initial on-task goal of 70%. Baseline to intervention Tau-U and IRD effect sizes were large to very large (Parker, Vannest, & Brown, 2009; Vannest & Ninci, 2015). These results satisfy Research Question 1 and indicate the Electronic Daily School Note intervention package increased participants' rates of on-task behavior as compared to baseline.

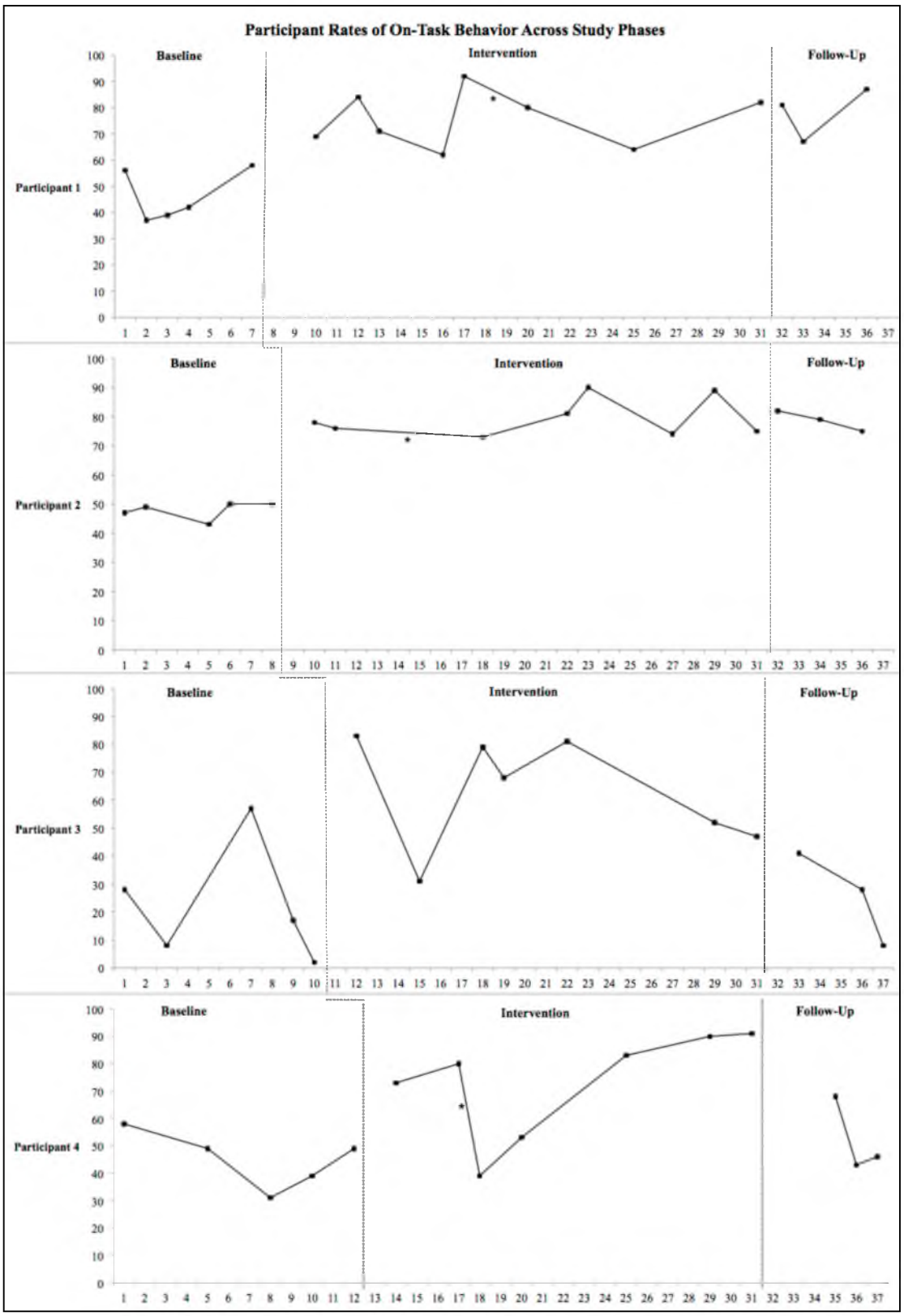


Figure 6. Participant Rates of On-Task Behavior Across Study Phases as Measured by Independent Direct Observation Probes

Question 2: Will Participants' Rates of On-Task Behavior After Receiving the Electronic Daily School Note Intervention Package Be Maintained at a 3-Week Follow-Up?

The average rate of on-task for all participants at 3 weeks follow-up was 59%, which represents a 19% increase from the baseline phase. The average baseline to follow-up Tau-U for all participants was .60 and the average intervention to follow-up IRD for all participants was .49. These effect sizes represent a 60% and a 49% data improvement across phases, respectively. See Tables 3 and 4 for the differential effects for each participant.

Participant 1's rate of on-task behavior was observed to be 78% at three weeks follow-up. Comparatively, Participant 1's rate of on-task behavior was 46% during the baseline phase and 76% during the intervention phase. Participant 1's level of on-task behavior during the follow-up phase was similar to that observed during the intervention phase and substantially higher than that observed during baseline. For on-task percentage, Participant 1's baseline to follow-up Tau-U was 1.0 and his baseline to follow-up IRD was .79.

Participant 2's rate of on-task behavior was observed to be 79% at three weeks follow-up. Comparatively, Participant 2's rate of on-task behavior was 48% during the baseline phase and 80% during the intervention phase. Participant 2's level of on-task behavior during the follow-up phase was similar to that observed during the intervention phase and substantially higher than that observed during baseline. For on-task percentage, Participant 2's baseline to follow-up Tau-U was 1.0 and his baseline to follow-up IRD was .79.

Table 3.

On-Task Percentages for All Participants Across Study Phases

Participant	Baseline	Intervention	Follow-Up & Change from Baseline
1	46%	76%	78% (+32%)
2	48%	80%	79% (+31%)
3	22%	63%	26% (+4%)
4	45%	73%	52% (+7%)
Total Average	40%	73%	59% (+19%)

Table 4.

Baseline to Follow-Up Effect Sizes for On-Task Percentage

Measure	Participant 1	Participant 2	Participant 3	Participant 4	Total
Tau-U	1.0	1.0	.20	.20	.60
IRD	.79	.79	.33	.04	.49

Participant 3's rate of on-task behavior was observed to be 26% at three weeks follow-up. Comparatively, Participant 3's rate of on-task behavior was 22% during the baseline phase and 63% during the intervention phase. Participant 3's level of on-task behavior during the follow-up phase was much lower than that observed during the intervention phase, but slightly higher than that observed during baseline. For on-task percentage, Participant 3's baseline to follow-up Tau-U was .20 and his baseline to follow-up IRD was .33.

Participant 4's rate of on-task behavior was observed to be 52% during the follow-up phase. Comparatively, Participant 4's rate of on-task behavior was 45% during the baseline phase and 73% during the intervention phase. Participant 4's level of on-task behavior was lower than that observed during the intervention phase but higher than that observed during baseline. For on-task percentage, Participant 4's baseline to follow-up

Tau-U was .20 and his baseline to follow-up IRD was .04.

Results indicate that, at three weeks follow-up, all participants' rates of on-task behavior remained above that observed during baseline. Two of the four participants exceeded their initial on-task goal of 70% during the follow-up phase. Participants 1 and 2 exhibited rates of on-task behavior that were similar to that observed during the intervention phase. Participants 3 and 4 exhibited rates of on-task behavior below that observed during the intervention phase, but above that observed at baseline. Tau-U and IRD maintenance effect size estimates were small to large. These results satisfy Research Question 2 and indicate participants' rates of on-task behavior remained above that observed during the baseline phase at a three-week follow-up.

Question 3: Will Participants' Rates of On-Task Behavior After Receiving the Electronic Daily School Note Intervention Package Be Similar to Those of Their Classroom Peers Who Have Not Received the Electronic Daily School Note Intervention Package?

Observational data collected during the baseline phase show a significant discrepancy between participant rates of on-task behavior and that of their same-sex classroom peers. The average baseline rate of on-task behavior for all participants was observed to be 40%, while that of same-sex classroom peers was 83%. During the intervention phase, the average rate of on-task behavior for all participants was 73%, while that of same-sex classroom peers was 84%. The difference between participants and their same-sex classroom peers decreased from 43% at baseline to 11% during the

intervention phase. See Figure 7 for the differential effects for each participant.

Participant 1's rate of on-task behavior was observed to be 46% at baseline, while that of peers was 85% at baseline. During the intervention phase, Participant 1's rate of on-task behavior increased to 76%, while that of peers was 86%. The difference between Participant 1's rate of on-task behavior and that of same-sex classroom peers decreased from 39% at baseline to 10% during the intervention phase. Results indicate that Participant 1's on-task behavior approximated that of same-sex classroom peers during the intervention phase.

Participant 2's rate of on-task behavior was observed to be 48% at baseline, while that of peers was 85% at baseline. During the intervention phase, Participant 2's rate of on-task behavior increased to 80%, while that of peers was 86%. The difference between Participant 2's rate of on-task behavior and that of same-sex classroom peers decreased.

Participant 2's rate of on-task behavior was observed to be 48% at baseline, while that of peers was 85% at baseline. During the intervention phase, Participant 2's rate of on-task behavior increased to 80%, while that of peers was 86%. The difference between Participant 2's rate of on-task behavior and that of same-sex classroom peers decreased from 37% at baseline to 6% during the intervention phase. Results indicate that Participant 2's on-task behavior approximated that of same-sex classroom peers during the intervention phase.

Participant 3's rate of on-task behavior was observed to be 22% at baseline, while that of same-sex classroom peers was 80% at baseline. During the intervention phase, Participant 3's rate of on-task behavior increased to 63%, while that of peers was 82%. The difference between Participant 3's rate of on-task behavior and that of same-sex

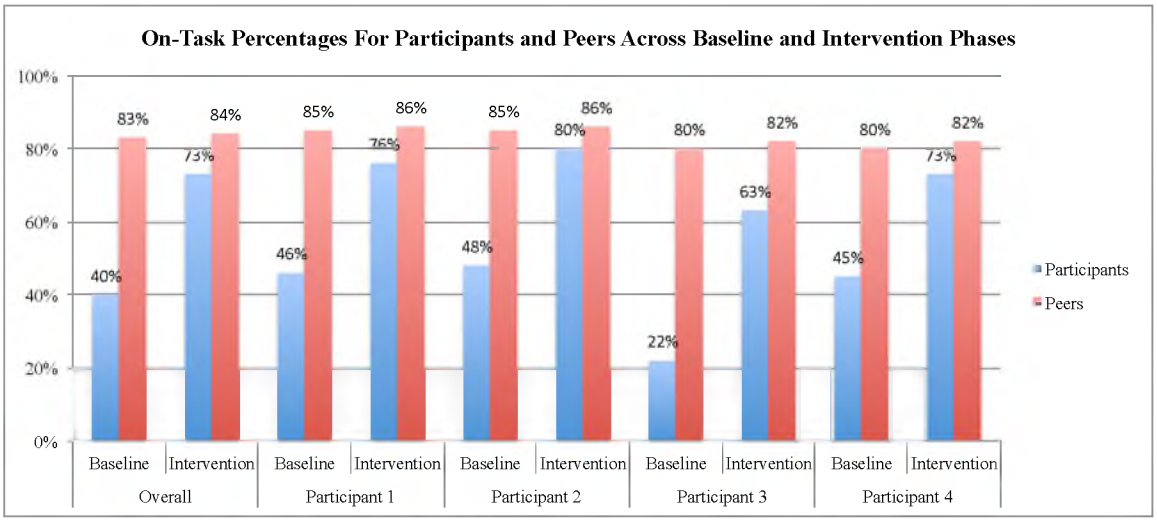


Figure 7. Comparison of On-Task Percentages Between All Participants and Peers Across Baseline to Intervention Phases

classroom peers decreased from 58% at baseline to 19% during the intervention phase. Results indicate that Participant 3 exhibited on-task behavior at a level below that of same-sex classroom peers during the intervention phase.

Participant 4's rate of on-task behavior was observed to be 45% at baseline, while that of same-sex classroom peers was 80% at baseline. During the intervention phase, Participant 4's rate of on-task behavior increased to 73%, while that of peers was 82%. The difference between Participant 4's rate of on-task behavior and that of same-sex classroom peers decreased from 35% at baseline to 9% during the intervention phase. Results indicate that Participant 4's on-task behavior approximated that of same-sex classroom peers during the intervention phase.

Three out of four participants exhibited rates on-task behavior that approximated those of same-sex classroom peers. Participant 2's on-task behavior was most similar to that of peers with a difference of only 6% in the intervention phase. Participant 4's on-task behavior was second most similar to peers and differed by 9% in the intervention

phase. Participant 1's on-task behavior was the third most similar to peers and differed by 10% in the intervention phase. Participant 3 was the least similar and the only participant who did not exhibit on-task behavior at a level similar to that of peers, with a difference of 19% during the intervention phase. These results satisfy Research Question 3 and indicate the Electronic Daily School Note intervention package increased three of four participants' rates of on-task behavior to a level similar to that of same-sex classroom peers.

Question 4: Will Teacher Ratings of Participants' On-Task Behavior With the Electronic Daily School Note Be Correlated With Participants' Rates of On-Task Behavior as Collected via Direct Observation?

During the intervention phase, two teachers were asked to complete the Electronic Daily School Note for each of their student participants. Each teacher rated their students' levels of on-task behavior during an independent math work time. Each teacher Electronic Daily School Note rating was compared with the results of an independent direct observation probe collected simultaneously. Teacher ratings were interpreted as a percentage on-task (e.g., a rating of *7* on the Electronic Daily School Note would be interpreted as 70% on-task).

A Pearson Product-Moment Correlation Coefficient (Rogers & Nicewander, 1988) was calculated for each participant to determine the similarity between independent observation probes and teacher ratings on the Electronic Daily School Note. One coefficient was calculated for each participant for all simultaneous ratings during the

intervention phase. A second coefficient was calculated for each teacher for all simultaneous ratings across both of their participants. Table 5 lists the correlation coefficients for each teacher and participant.

There was a significant positive correlation between Teacher 1's ratings of on-task behavior using the Electronic Daily School Note and results of independent observation probes, $r = .70$, $n = 16$, $p < .05$. There was a significant positive correlation between Teacher 1's rating of Participant 1's on-task behavior and results of independent observation probes, $r = .74$, $n = 8$, $p < .05$. There was a positive correlation between Teacher 1's rating of Participant 2's on-task behavior and results of independent observation probes. However, this correlation was not significant at the .05 level, $r = .59$, $n = 8$, $p < .123$. All Electronic Daily School Note ratings made by Teacher 1 fell within two points of results obtained via direct observation.

There was a significant positive correlation between Teacher 2's ratings of on-task behavior using the Electronic Daily School note and results of independent observation probes, $r = .89$, $n = 14$, $p < .05$. There was a significant positive correlation between Teacher 2's rating of Participant 3's on-task behavior and results of independent observation probes, $r = .81$, $n = 7$, $p < .05$. On one occasion during the intervention phase, Teacher 2 was notified that her rating of on-task behavior on the Electronic Daily School Note differed by more than two points of results obtained via independent direct observation. This was the only time either teacher was notified of any significant rating difference during the intervention phase. This recalibration notification may have led to increased similarity between Teacher 2's ratings and results of direct observation. There was a significant positive correlation between Teacher 2's rating of Participant 4's on-

Table 5.

Pearson Correlation Coefficients for All Participants and Teachers

Participant	Teacher 1	Teacher 2
1	.74* (n = 8)	
2	.59 (n = 8)	
3		.81* (n = 7)
4		.97* (n = 7)
Total	.70* (n = 16)	.89* (n = 14)

* = Significant at the .05 level (2-tailed)

task behavior and results of independent observation probes, $r = .97$, $n = 7$, $p < .05$

Teacher ratings of on-task behavior using the Electronic Daily School Note were significantly positively correlated with results of independent observation probes during the intervention phase. Correlational coefficients exceeded .70 for Participants 1, 3, and 4. There was a positive correlation between Teacher 1's ratings of Participant 2's on-task behavior and results of independent observation probes; however, this correlation was not significant at the .05 level.

On one occasion during the intervention phase, Teacher 2 was notified that her rating differed by three points from results obtained via independent direct observation. This was the only notification required by either teacher; all other teacher Electronic Daily School Note ratings fell within two points of results obtained via direct observation probes. The recalibration may have increased the similarity of Teacher 2's ratings and results of direct observation. These results satisfy Research Question 4 and indicate there were significant positive correlations at the .05 level between data obtained via direct observation probes and teacher ratings on the Electronic Daily School Note.

Question 5: Will Participants' Rates of Problem Completion on Curriculum-Based Math Worksheets Be Higher Than Baseline Problems Completed After Receiving the Electronic Daily School Note Intervention Package?

Participants 1 and 2 completed curriculum-based math worksheets containing 80 math problems generated from the Math Worksheet Generator. Participants 3 and 4 completed curriculum-based math worksheets containing 75 math problems from *Monitoring Basic Skills Progress: Basic Math, 2nd Edition* (Fuchs, Hamlett, & Fuchs, 1999). At baseline, participants completed an average of 31 problems. During the intervention phase, participants completed an average of 49 problems, which represents a 24% increase of the total worksheet completed from the baseline phase. For all participants, the average baseline to intervention Tau-U was .65 and the average baseline to intervention IRD was .67. These effect sizes represent a 65% and a 67% data improvement across phases, respectively.

At three weeks follow-up, participants completed an average of 28 problems, which represents a 4% decrease of the total worksheet completed from the baseline phase. The average baseline to follow-up Tau-U for all participants was -.12 and the average baseline to follow-up IRD was .07. These effect sizes represent a 12% data decline and a 7% data improvement across phases, respectively. See Tables 6-8 for the differential effects for each participant.

Participant 1 completed an average of 36 out of 80 problems on each curriculum-based math worksheet at baseline. During the intervention phase, Participant 1 completed 52 out of 80 math problems, which represents a 20% increase of the total worksheet

Table 6.

Math Problems Completed Across Study Phases

Participant	Baseline	Intervention & Change from Baseline	Follow-Up & Change from Baseline
1	36	52 (+20%)	56 (+25%)
2	49	55 (+8%)	47 (-2%)
3	20	39 (+25%)	1 (-25%)
4	19	50 (+41%)	9 (-13%)
Total Average	31	49 (+24%)	28 (-4%)

Table 7.

Baseline to Intervention Effect Sizes for Math Problems Completed

Measure	Participant 1	Participant 2	Participant 3	Participant 4	Total
Tau-U	.85	.67	.58	.45	.65
IRD	.67	.75	.56	.69	.67

Table 8.

Baseline to Follow-Up Effect Sizes for Math Problems Completed

Measure	Participant 1	Participant 2	Participant 3	Participant 4	Total
Tau-U	.94	-.08	-.82	-.81	-.12
IRD	.68	.36	-.51	-.31	.07

completed from the baseline phase. For math problems completed, Participant 1's baseline to intervention Tau-U was .85 and his baseline to intervention IRD was .67. At three weeks follow-up, Participant 1 completed an average of 56 out of 80 math problems, which represents a 25% increase of the total worksheet completed from baseline. Participant 1's baseline to follow-up Tau-U was .94 and his baseline to follow-up IRD was .68.

Participant 2 completed an average of 49 out of 80 problems on each curriculum-based math worksheet at baseline. During the intervention phase, Participant 2 completed 55 out of 80 math problems, which represents an 8% increase of the total worksheet completed from the baseline phase. For math problems completed, Participant 2's baseline to intervention Tau-U was .67 and his baseline to intervention IRD was .75. At three weeks follow-up, Participant 2 completed an average of 47 out of 80 math problems, which represents a 2% decrease of the total worksheet completed from baseline. Participant 2's baseline to follow-up Tau-U was -.08 and his baseline to follow-up IRD was .36.

Participant 3 completed an average of 20 out of 75 problems on each curriculum-based math worksheet at baseline. During the intervention phase, Participant 3 completed 39 out of 75 math problems, which represents a 25% increase of the total worksheet completed from the baseline phase. For math problems completed, Participant 3's baseline to intervention Tau-U was .58, and his baseline to intervention IRD was .56. At three weeks follow-up, Participant 3 completed an average of 1 out of 75 math problems, which represents a 25% decrease of the total worksheet completed from baseline. Participant 3's baseline to follow-up Tau-U was -.82 and his baseline to follow-up IRD

was -.51.

Participant 4 completed an average of 19 out of 75 problems on each curriculum-based math worksheet at baseline. During the intervention phase, Participant 4 completed 50 out of 75 math problems, which represents a 41% increase of the total worksheet completed from the baseline phase. For math problems completed, Participant 4's baseline to intervention Tau-U was .45 and his baseline to intervention IRD was .69. At three weeks follow-up, Participant 4 completed an average of 9 out of 75 math problems, which represents a 13% decrease of the total worksheet completed from baseline. Participant 4's baseline to follow-up Tau-U was -.81, and his baseline to follow-up IRD was -.31.

Results indicate that all participants increased the number of math problems completed on their curriculum-based math worksheets during the intervention phase as compared to baseline. On average, there was a 24% increase of the total worksheet completed from the baseline phase to the intervention phase across all participants. Participant 4 had the largest improvement of 41%, while Participant 3 had the second largest improvement of 25%. Participant 1 had the third largest improvement of 20% and Participant 2 had the smallest improvement of 8%. Tau-U and IRD intervention effect size estimates were medium to large. At a three-week follow-up, the average number of problems completed remained above baseline for Participant 1. However, these effects did not maintain for Participants 2, 3, and 4, who completed fewer math problems than completed during the baseline phase. These results satisfy Research Question 5 and indicate mixed intervention effects for math work completion. There were medium to large initial intervention effects for all participants, which were maintained for only

Participant 1 at a three-week follow-up.

Question 6: Will Participants' Rates of Problems Completed Correctly on Curriculum-Based Math Worksheets Be Higher Than Baseline Rates of Problems Completed Correctly After Receiving the Electronic Daily School Note Intervention Package?

During the baseline phase, participants completed an average of 25 problems correctly. Participants completed an average of 40 problems correctly during the intervention phase, which represents a 21% increase of the total worksheet completed from the baseline phase. For all participants, the average baseline to intervention Tau-U was .70 and the average baseline to intervention IRD was .71. These effect sizes represent a 70% and a 71% data improvement across phases, respectively. At three weeks follow-up, participants completed an average of 25 problems correctly, which represents a 0% change from the baseline phase. The average baseline to follow-up Tau-U for all participants was -.07 and the average baseline to follow-up IRD was -.04. These effect sizes represent a 7% and a 4% data decline across phases, respectively. See Tables 9-11 for the differential effects for each participant.

Participant 1 completed an average of 27 out of 80 problems correctly on each curriculum-based math worksheet at baseline. During the intervention phase, Participant 1 completed 41 out of 80 math problems correctly, which represents an 18% increase of the total worksheet completed from the baseline phase. For math problems completed correctly, Participant 1's baseline to intervention Tau-U was .86, and his baseline to

Table 9.

Math Problems Completed Correctly Across Study Phases

Participant	Baseline	Intervention & Change from Baseline	Follow-Up & Change from Baseline
1	27	41 (+18%)	44 (+21%)
2	43	53 (+13%)	45 (+3%)
3	13	30 (+23%)	1 (-16%)
4	16	37 (+28%)	8 (-11%)
Total Average	25	40 (+21%)	25 (+/- 0%)

Table 10.

Baseline to Intervention Effect Sizes for Math Problems Completed Correctly

Measure	Participant 1	Participant 2	Participant 3	Participant 4	Total
Tau-U	.86	.74	.68	.46	.70
IRD	.71	.85	.57	.69	.71

Table 11.

Baseline to Follow-Up Effect Sizes for Math Problems Completed Correctly

Measure	Participant 1	Participant 2	Participant 3	Participant 4	Total
Tau-U	.91	0	-.71	-.76	-.07
IRD	.68	.25	-.51	-.31	.04

intervention IRD was .71. At three weeks follow-up, Participant 1 completed an average of 44 out of 80 problems correctly, which represents a 21% increase of the total worksheet completed from the baseline phase. Participant 1's baseline to follow-up Tau-U was .91, and his baseline to follow-up IRD was .68.

Participant 2 completed an average of 43 out of 80 problems correctly on each curriculum-based math worksheet at baseline. During the intervention phase, Participant

2 completed 53 out of 80 problems correctly, which represents a 13% increase of the total worksheet completed from the baseline phase. For math problems completed correctly, Participant 2's baseline to intervention Tau-U was .86 and his baseline to intervention IRD was .71. At three weeks follow-up, Participant 2 completed an average of 45 out of 80 problems correctly, which represents a 3% increase of the total worksheet completed from the baseline phase. Participant 2's baseline to follow-up Tau-U was 0.0 and his baseline to follow-up IRD was .25.

Participant 3 completed an average of 13 out of 75 problems correctly on each curriculum-based math worksheet at baseline. During the intervention phase, Participant 3 completed 30 out of 75 math problems correctly, which represents a 23% increase of the total worksheet completed from the baseline phase. For math problems completed correctly, Participant 3's baseline to intervention Tau-U was .68, and his baseline to intervention IRD was .57. At three weeks follow-up, Participant 3 completed 1 out of 75 problems correctly, which represents a 16% decrease of the total worksheet from the baseline phase. Participant 3's baseline to follow-up Tau-U was -.71 and his baseline to follow-up IRD was -.51.

Participant 4 completed an average of 16 out of 75 math problems correctly on each curriculum-based math worksheet at baseline. During the intervention phase, Participant 4 completed 37 out of 75 math problems correctly, which represents a 28% increase of the total worksheet completed from the baseline phase. For math problems completed correctly, Participant 4's baseline to intervention Tau-U was .46, and his baseline to intervention IRD was .69. At three weeks follow-up, Participant 4 completed 8 out of 75 problems correctly, which represents an 11% decrease of the total worksheet

completed from the baseline phase. Participant 4's baseline to follow-up Tau-U was -.76 and his baseline to follow-up IRD was -.31.

Results indicate that all participants increased the number of math problems completed correctly on their curriculum-based math worksheets during the intervention as compared to baseline. On average, there was a 21% increase of the total worksheet completed from baseline to the intervention across all participants. Participant 4 had the largest improvement of 28%, while Participant 2 had the smallest improvement of 13%. Tau-U and IRD intervention effect size estimates were medium to large. At a three-week follow-up, the average number of problems completed correctly remained above baseline for Participant 1. However, these effects did not maintain for Participants 2, 3, and 4. Participants 3 and 4 completed fewer math problems correctly than completed during the baseline phase. These results satisfy Research Question 6 and suggest mixed intervention effects for math accuracy. There were medium to large initial intervention effects for all participants, which were maintained for only Participant 1 at a three-week follow-up.

Question 7: Will Parents Consistently Review Electronic Daily School Note Data With Their Child?

During the intervention phase, participants' parents were asked to review their child's Electronic Daily School Note data and send a response email indicating they had reviewed the data. The average rate of parent review was 84% across the total number of Electronic Daily School Notes submitted by teachers. Refer to Table 12 for the differential rate of parent review for each participant.

During the intervention phase, Participant 1's parent sent a response email 75% of

Table 12.

Parent Review Percentage of Electronic Daily School Note Data

Participant	Parent Review Percentage
1	75%
2	68%
3	100%
4	92%
Total Average	84%

the time. Participant 2's parent sent a response email 68% of the time. Participant 3's parent sent a response email 100% of the time. Participant 4's parent sent a response email 92% of the time.

Question 8: Will Parents Report Positive Ratings Regarding Participation in the Intervention?

Each participant's parent was asked to complete a social validity questionnaire at the conclusion of the intervention phase. The questionnaire consisted of 25 statements adapted from Knorr (2015) and the *Behavior Intervention Rating Scale* (Elliott & Treuting, 1991). Statements were rated on a six-point Likert-type scale, which ranged from *Strongly Disagree* to *Strongly Agree* (Appendix B). Table 13 shows the 25 statements and corresponding responses made by each parent, and a mean rating.

The total mean score for all parent questionnaire items was 5.24, suggesting that parents had positive perceptions about the Electronic Daily School Note intervention package as a whole. All parent questionnaire items had ratings at or above a rating of 4, indicating slight to strong agreement with all 25 statements. No item had a rating below 4, which would have indicated slight to strong disagreement. Parent responses concerning

Table 13.

Parent Intervention Rating Scale Responses
1 = Strongly Disagree 2 = Disagree 3 = Slightly Disagree
4 = Slightly Agree 5 = Agree 6 = Strongly Agree

Statement	Participant 1's Parent	Participant 2's Parent	Participant 3's Parent	Participant 4's Parent	Mean
1. This was an acceptable intervention for the child's problem behavior.	6	5	6	6	5.75
2. Most parents would find this intervention appropriate for problem behaviors in addition to the one addressed.	6	6	5	6	5.75
3. The intervention proved effective in changing the child's problem behavior.	6	6	4	6	5.5
4. I would suggest the use of this intervention to other parents.	6	6	6	5	5.75
5. The child's behavior problem was severe enough to warrant the use of this intervention.	5	4	6	6	5.25
6. Most parents would find this intervention suitable for the behavior problem addressed.	6	5	6	5	5.5
7. I would be willing to use this in the home.	5	6	5	4	5
8. The intervention did not result in negative side effects for this child.	6	6	5	6	5.75
9. The intervention would be an appropriate intervention for a variety of children.	6	6	6	5	5.75
10. The intervention is consistent with those I have used in the home setting.	4	5	5	4	4.5
11. The intervention was a fair way to handle the child's problem behavior.	6	6	5	5	5.5

Table 13 Continued

Statement	Participant 1's Parent	Participant 2's Parent	Participant 3's Parent	Participant 4's Parent	Mean
12. The intervention is reasonable for the behavior problem addressed.	6	6	5	6	5.75
13. I like the procedures used in the intervention.	6	6	6	6	6
14. The intervention was a good way to handle this child's behavior problem.	6	6	5	6	5.75
15. Overall, the intervention was beneficial for the child.	6	6	5	6	5.75
16. The intervention quickly improved the child's behavior to the point that it would not noticeably deviate from other classmates' behavior.	5	5	4	5	4.75
17. The intervention will produce a lasting improvement in the child's behavior.	5	5	4	5	4.75
18. The intervention improved the child's behavior to the point that it would not noticeably deviate from other classmates' behavior.	6	5	4	4	4.75
19. Soon after using the intervention, a teacher would notice a positive change in the problem behavior.	5	5	4	5	4.75
20. The child's behavior will remain at an improved level even after the intervention is discontinued.	5	5	5	4	4.75
21. Using the intervention should not only improve behavior in the classroom, but also in other settings (e.g., other classrooms, home).	5	5	4	5	4.75

Table 13 Continued

Statement	Participant 1's Parent	Participant 2's Parent	Participant 3's Parent	Participant 4's Parent	Mean
22. When comparing the child with a well-behaved peer before and after use of the intervention, the child's and the peer's behavior are more alike after the intervention.	6	5	4	5	5
23. The intervention produced enough improvement in the child's behavior so the behavior is no longer a problem in the classroom.	5	5	4	4	4.5
24. Other behaviors related to the problem behavior are also likely to be improved by the intervention.	5	4	4	5	4.5
25. The intervention improved my collaboration with the child's teacher.	6	5	5	5	5.25

their perceptions about the intervention were positive for all items on the social validity questionnaire. All parents agreed that the intervention improved their collaboration with their child's teacher.

The parent social validity questionnaire also contained four open-ended questions designed to allow each parent to more freely convey their perceptions about the intervention. When asked what aspects she liked about the Electronic Daily School Note, Participant 1's parent stated, "The daily feedback," "The prizes," and "Everything in this program is good." Participant 1's parent reported no undesirable aspects of the intervention or program.

When asked what aspects she liked about the Electronic Daily School Note, Participant 2's parent stated, "Seeing his scores" and that she "Liked the way [the program] was done." Participant 2's parent indicated that she wished there was "More teacher feedback," but did not report any undesirable aspects of the program as a whole.

When asked what aspects he liked about the Electronic Daily School Note, Participant 3's parent stated, "Getting feedback every day and communication" and liked "The whole program, feedback, and so forth." Participant 3's parent indicated that he wished there was "More one-on-one with [Participant 3]," but did not report any undesirable aspects of the intervention. When asked what aspects she liked about the Electronic Daily School Note, Participant 4's parent stated, "Having more insight and helpful information from the teacher and more immediate feedback" and "Liked it all because it gave [Participant 4] something to look forward to." Participant 4's parent reported no undesirable aspects of the intervention or program as a whole.

Parents reported positive ratings on the social validity questionnaire and all

comments were generally positive. The only aspects of the intervention or program that parents found undesirable were related to wanting additional teacher feedback and more one-on-one time with the student. Results indicate that parents found the Electronic Daily School Note intervention package as highly acceptable and reported positive effects of the intervention on their child's on-task behavior. These results satisfy Research Question 8 and indicate that parents had a positive overall level of satisfaction with the process, effects, and outcomes of the Electronic Daily School Note intervention.

Question 9: Will Teachers Report Positive Ratings Regarding Participation in the Intervention?

Each participant's teacher was asked to complete a social validity questionnaire at the conclusion of the intervention phase. The questionnaire consisted of 25 statements adapted from Knorr (2015) and the *Behavior Intervention Rating Scale* (Elliott & Treuting, 1991). Statements were rated on a six-point Likert-type scale, which ranged from *Strongly Disagree* to *Strongly Agree* (Appendix B). Table 14 shows the 25 statements and corresponding responses made by each teacher, and a mean rating. Participants 1 and 2 were in the same class, and Participants 3 and 4 were in the same class; therefore, each teacher completed one questionnaire.

The total mean score for all teacher questionnaire items was 3.46, suggesting that teachers reported ambivalent perceptions of the Electronic Daily School Note intervention package as a whole. Of the 25 questionnaire items, 12 had ratings at or above 4, indicating slight to strong agreement. Thirteen items had a rating below 4, indicating slight to strong disagreement. Teacher responses concerning their perceptions

Table 14.

Teacher Intervention Rating Scale Responses
(Elliot & Treuting, 1991)
1 = Strongly Disagree 2 = Disagree 3 = Slightly Disagree
4 = Slightly Agree 5 = Agree 6 = Strongly Agree

Statement	Participants 1 & 2's Teacher	Participants 3 & 4's Teacher	Mean
1. This was an acceptable intervention for the child's problem behavior.	5	5	5
2. Most teachers would find this intervention appropriate for problem behaviors in addition to the one addressed.	5	4	4.5
3. The intervention proved effective in changing the child's problem behavior.	3	2	2.5
4. I would suggest the use of this intervention to other teachers.	4	5	4.5
5. The child's behavior problem was severe enough to warrant the use of this intervention.	6	6	6
6. Most teachers would find this intervention suitable for the behavior problem addressed.	4	5	4.5
7. I would be willing to use this in a classroom setting.	5	5	5
8. The intervention did not result in negative side effects for this child.	5	6	5.5
9. The intervention would be an appropriate intervention for a variety of children.	4	5	4.5
10. The intervention is consistent with those I have used in classroom settings.	2	1	1.5
11. The intervention was a fair way to handle the child's problem behavior.	4	5	4.5
12. The intervention is reasonable for the behavior problem addressed.	4	5	4.5
13. I like the procedures used in the intervention.	5	3	4
14. The intervention was a good way to handle this child's behavior problem.	4	3	3.5
15. Overall, the intervention was beneficial for the child.	4	3	3.5
16. The intervention quickly improved the child's behavior,	3	1	2
17. The intervention will produce a lasting improvement in the child's behavior.	2	1	1.5

Table 14 Continued

Statement	Participants 1 & 2's Teacher	Participants 3 & 4's Teacher	Mean
18. The intervention improved the child's behavior to the point that it would not noticeably deviate from other classmates' behavior.	2	1	1.5
19. Soon after using the intervention, a teacher would notice a positive change in the problem behavior.	2	3	2.5
20. The child's behavior will remain at an improved level even after the intervention is discontinued.	2	1	1.5
21. Using the intervention should not only improve behavior in the classroom, but also in other settings (e.g., other classrooms, home).	1	1	1
22. When comparing the child with a well-behaved peer before and after use of the intervention, the child's and the peer's behavior are more alike after the intervention.	5	2	3.5
23. The intervention produced enough improvement in the child's behavior so the behavior is no longer a problem in the classroom.	1	1	1
24. Other behaviors related to the problem behavior are also likely to be improved by the intervention.	2	5	3.5
25. The intervention improved my collaboration with the child's parent.	4	6	5

about the intervention were mixed. Results indicate teachers had lower optimism for the overall intervention effectiveness, quickness of effect, and potency. Teachers also reported less optimism about the maintenance and generalization of intervention effects.

However, teachers also indicated positive perceptions about the intervention regarding its suitability for the problem behavior, applicability to other contexts, its procedures, and recommended use to other teachers. In addition, teachers indicated high levels of intervention acceptability for the problem behavior, likelihood of future use, and lack of negative side effects. Both teachers agreed that the intervention improved their collaboration with their students' parents.

The teacher social validity questionnaire also contained four open-ended questions designed to allow each teacher to more freely convey their perceptions about the intervention. When asked what aspects she liked about the Electronic Daily School Note, Participant 1 and 2's teacher stated, "[The Electronic Daily School Note was] an easy way to give parents information. It gave me a chance to closely observe the students." She also stated that the Electronic Daily School Note was "Easy to use. I knew parents received it instead of relying on a student to get it home." Regarding aspects she found undesirable, Participant 1 and 2's teacher stated, "Students performed for just the 15 min. It did not carry over to other subjects or times of day." She also stated, "Communication was one way for me" and "Rewards connected to parent responses made the student responsible for parent behavior instead of on-task behavior."

When asked what aspects she liked about the Electronic Daily School Note, Participant 3 and 4's teacher stated, "Electronic [format], parent communication daily." She also stated, "Reward schedule, electronic observations, school psychologist contact."

Regarding aspects she found undesirable, Participant 3 and 4's teacher stated, "It was only a 15-min time frame a day" and "Reward schedule needs to be more streamlined and less frequent. A prize for just a returned email is too generous."

Teacher ratings on the social validity questionnaire and comments were mixed. Teachers generally reported less optimism about the potency, generalizability, and maintenance of intervention effects. However, in general, teachers indicated positive perceptions about intervention simplicity, suitability, applicability, likelihood of future use, recommendation to other teachers, and improved home-school collaboration. Results indicate that teachers found the Electronic Daily School Note to be a practical, acceptable, and suitable intervention for improving participants' rates of on-task behavior. These results satisfy Research Question 9 and indicate mixed teacher perceptions of the Electronic Daily School Note intervention.

Question 10: Will Students Report Positive Ratings Regarding Participation in the Intervention?

Each participant was asked to complete a social validity questionnaire at the conclusion of the intervention phase. The questionnaire consisted of eight statements adapted from Knorr (2015) and the *Children's Intervention Rating Profile* (Elliott & Treuting, 1986). Statements were rated on a six-point Likert-type scale, which ranged from *Strongly Disagree* to *Strongly Agree* (Appendix B). Table 15 shows the eight statements and corresponding responses made by each participant, and a mean rating. The total mean score for positively worded questionnaire items was 5.58, suggesting that participants had positive perceptions about the Electronic Daily School Note intervention

Table 15.

Child Intervention Rating Scale Responses
(Elliot, 1986)
1 = Strongly Disagree 2 = Disagree 3 = Slightly Disagree
4 = Slightly Agree 5 = Agree 6 = Strongly Agree

Statement	Participant 1	Participant 2	Participant 3	Participant 4	Mean
1. Teachers using the Electronic Daily School Note seemed fair.	6	5	6	5	5.5
2. Reviewing my behaviors with my parents was fair.	6	6	6	5	5.75
3. Reviewing my behaviors with the school psychologist was fair.	6	5	6	6	5.75
4. Having the teacher use the Electronic Daily School Note caused problems with my friends.	2	1	1	1	1.25
5. There are better ways to help me stay focused on my work.	6	4	1	3	3.5
6. This would be a good program to use with other kids.	5	4	5	6	5
7. I like this program to help me stay focused.	6	5	6	6	5.75
8. I think the Electronic Daily School Note helped me do better in school.	5	6	6	6	5.75

package. This score also indicates that participants felt the intervention helped them stay focused and to do better in school. All participants agreed that the intervention would be a good program to use with other children. The total mean score for reverse-scored questionnaire items was 2.38, suggesting that participants did not feel their participation in the intervention was negative.

The participant social validity questionnaire also contained four open-ended questions designed to allow each participant to more freely convey their perceptions about the intervention. When asked what aspects he liked about the Electronic Daily School Note, Participant 1 stated, "I come every week for prizes." Participant 1 reported that he did not like "When my mom sees when I get 6 or lower," but did not report any undesirable aspects of the program as a whole. When asked what aspects he liked about the Electronic Daily School Note, Participant 2 stated, "Prizes." Participant 2 did not report any undesirable aspects of the intervention or program.

When asked what aspects he liked about the Electronic Daily School Note, Participant 3 stated, "Getting the prizes" and "Everything." Participant 3 did not report any undesirable aspects of the intervention or program. When asked what he liked about the Electronic Daily School Note, Participant 4 stated, "Everything!!!" Participant 4 reported that "[My teacher] was slightly strict" with respect to daily ratings, but did not report any undesirable aspects of the program as a whole.

Participant responses concerning their perceptions about the intervention were positive for all items on the social validity questionnaire. All comments were generally positive. The only aspects of the intervention or program that participants did not like were related to parents seeing ratings falling below their on-task goal and perceived

teacher strictness in daily ratings. These results satisfy Research Question 10 and indicate that participants found the Electronic School Note intervention package as highly acceptable and reported positive effects of the intervention on their school experience.

Question 11: Will Students Perceive Reward Days as Enjoyable and Useful?

The Fun 'O' Meter (Jenson & Sprick, 2014) was used to evaluate the degree to which participants perceived each Reward Day as enjoyable and useful. Participants rated the Fun 'O' Meter at the end of each Reward Day, and ratings were used to monitor participant perceptions about the intervention. Participant ratings on the Fun 'O' Meter fell within one of five categories, which ranged from least helpful to most helpful. These categories with their corresponding numerical value were: No Help (1), Ouch! (2), Getting Better (3), Go For It! (4), and Great (5). A mean rating was calculated for each participant's total ratings. See Table 16 for each participant's mean Fun 'O' Meter rating throughout the intervention phase.

Results indicate that participants' average rating of Reward Days was 4.75. All participant ratings on the Fun 'O' Meter across all Reward Days were at or above a rating of 3. This indicates participants had positive perceptions about all Reward Days throughout the intervention phase. Additionally, all participants completed their individualized Chart Moves Board and earned their large reinforcer during the final week of the intervention phase. All participants chose to share their large earned reinforcer with a fellow study participant. These results satisfy Research Question 11 and indicate participants perceived Reward Days as both highly enjoyable and useful.

Table 16.

Average Participant Fun 'O' Meter Rating
(Jenson & Sprick, 2014)
1 = No Help 2 = Ouch! 3 = Getting Better 4 = Go For It! 5 = Great!

Participant	Average Rating
1	4.67
2	4.40
3	4.92
4	5.00
Total Average	4.75

Interobserver Reliability

To ensure interobserver reliability, the research assistant engaged in an observation training session as previously described. The research assistant watched the observation training video and practiced performing direct observations using a momentary time sampling response discrepancy format. Practice systematic direct observations were repeated until the research assistant became fluent with the observation procedure and a minimum Cohen's Kappa of .80 was achieved. An agreement plus disagreement model was also calculated. See Table 17 for the interobserver reliability coefficients for the observation training video.

Of the observation probes collected throughout all study phases, 38% were assessed for interrater reliability. Both Cohen's Kappa and an agreement plus disagreement model were calculated for each simultaneous observation. A Cohen's Kappa reliability coefficient of .79 was achieved between the independent observers across all simultaneous observations. An agreement plus disagreement reliability coefficient of .92 was achieved across all simultaneous observations. See Table 18 for the reliability coefficients for each participant.

Table 17.

Interobserver Reliability for Observation Training Video

Cohen's Kappa	Agreement + Disagreement
.84	.91

Table 18.

Interobserver Reliability Throughout Study Phases

Measure	Participant 1	Participant 2	Participant 3	Participant 4	Total Average
Cohen's Kappa	.80	.81	.75	.79	.79
Agreement + Disagreement	.92	.93	.91	.92	.92

Treatment Fidelity

The researcher and research assistants used treatment fidelity checklists to ensure research sessions were implemented with integrity. The researcher and research assistants checked off each step as it was completed during each Parent, Teacher, and Student Orientation Session, Parent and Teacher Booster Session, and Reward Day. Based on these fidelity checklists, research sessions were delivered with 100% fidelity.

DISCUSSION

Introduction

On-task behavior is considered a keystone behavior due to its substantial impact on student learning and academic performance (Ducharme & Schecter, 2011). Increased on-task behavior is associated with enhanced academic achievement, prosocial classroom behavior, and positive student-teacher interactions (Jenson & Sprick, 2014; Reavis et al., 1996). Targeting specific keystone behaviors such as on-task behavior promotes generalization of desired behaviors to other skill areas (Ducharme & Schecter, 2011).

In general, typically progressing students are on-task 85% of the time, while students with academic or behavioral difficulties are on-task approximately 50% or less (Jenson & Sprick, 2014; Rhode, Jenson & Reavis, 2010). This difference represents a substantial loss of instructional time and learning opportunities (Jenson & Sprick, 2014). Off-task behavior occurs at a disruptive level in 8-12% of elementary students, negatively impacting other students' ability to learn (Owens et al., 2012). These effects negatively impact the entire class, resulting in more teacher time devoted to classroom management and less time dedicated to academic instruction (De Martin-Scully, Bray, & Kehle, 2000). Taken together, there is a clear need for interventions to increase students' on-task behavior to facilitate learning and promote greater academic success.

The efficacy of home notes has been extensively documented across decades of research for improving behavior, academic performance, and home-school collaboration

(Atkeson & Forehand, 1979; Kelley, 1990; Knorr, 2015; Vannest et al., 2010; Volpe & Fabiano, 2013). Home notes have been effective in addressing a range of academic and behavioral issues, in children of all ages, at individual and class levels, and in a variety of settings (Vannest et al., 2010). However, when used in traditional paper form, home notes may be forged, lost, or destroyed (Rhode, Jenson, & Reavis, 2010).

Knorr (2015) was the first to evaluate the effectiveness of a Google-based electronic home note for on-task behavior and math performance with direct reinforcement of parent review. Results indicated the intervention was highly acceptable, effective, and had high parental involvement. Parent review consistency produced larger intervention effects (i.e., increased rates of on-task behavior), highlighting the importance of parental involvement in school-based interventions. However, students' on-task behavior was not directly reinforced. Thus, the utility, effectiveness, and acceptability of the Electronic Daily School Note intervention warrants further investigation when on-task behavior is contingently reinforced.

Previous Research

Atkeson and Forehand (1979) conducted the first known comprehensive review of home note intervention studies targeting academic and disruptive behaviors. Results suggested that home notes were universally effective interventions and that treatment effects were shown only when contingent consequences were incorporated. Research reviews conduced by Barth (1979) and Smith, McLaughlin, and Williams (1983) suggested that home notes were highly flexible, successfully employed in a variety of treatment settings and with various demographic groups, and increased home-school

collaboration.

Home notes have been used to increase prosocial behaviors and decrease a variety of disruptive behaviors including aggression, talk-outs, noncompliance, and tantrums (Budd et al., 1981; Drew et al., 1982; Galloway & Sheridan, 1994; McCain and Kelley, 1993; McGoey, Prodan, and Condit, 2007). Home notes have also been effective for improving academic skills such as reading fluency and comprehension (Trovato & Bucher, 1980); work completion (Blechman et al, 1981); and math accuracy (Blechman et al., 1981; Galloway & Sheridan, 1994; Knorr, 2015).

Home notes have frequently been used to target a combination of academic and behavioral skills. Specifically, home notes have been effective for reducing disruptive behavior, and increasing on-task behavior and academic productivity in both elementary and secondary students (Dougherty and Dougherty, 1977; Jurbergs, Palcic, & Kelley, 2007; Leach & Byrne, 1986). Several studies found that increased parental involvement was associated with larger treatment effects (Blechman et al., 1981; Galloway & Sheridan, 1994; Knorr, 2015; McGoey, Prodan, & Condit, 2007; Trovato & Bucher, 1980).

Vannest and colleagues (2010) conducted the only known meta-analysis of home note intervention research. The study examined 17 studies published between 1970 and 2007 targeting disruptive and on-task behavior. Home notes had a mean IRD of .61 with no significant differences in effect for study quality, grade level, or target behavior. This indicates that home note interventions are equally effective regardless of the degree of methodological rigor, for both elementary and secondary students, and when used to target disruptive and on-task behavior. Larger effect sizes were associated with greater

levels of home-school collaboration, intervention applications of longer than one hour per day, use of qualitative rating scales, and collaborative efforts to conduct reliability assessments.

Home notes have also been effectively used as an intervention and progress-monitoring tool for IEP goals, and are considered a best-practice treatment for students diagnosed with ADHD (DuPaul, 1991; Fabiano et al., 2014; Pelham & Fabiano, 2008; U.S. Department of Education, 2004; Volpe & Fabiano, 2013). Owens and colleagues (2012) suggest an ideal home note intervention application of at least two months before considering discontinuation, and highlight the importance of setting achievable behavioral goals to increase the likelihood of student success.

Grady (2013) found that a home note intervention with behavioral parent training resulted in improved academic and behavioral outcomes as compared to a nontraining condition. Additionally, Knorr (2015) found that increased parental involvement was associated with larger improvements in on-task behavior. Vujnovic and colleagues (2013) found that regular follow-up parent and teacher training sessions are necessary to maintain intervention fidelity long-term. Similarly, regular self-monitoring of intervention fidelity, performance feedback, consultation, and coaching are associated with higher teacher levels of intervention acceptability, fidelity, and likelihood of intervention adoption (Hagermoser Sanetti et al., 2013; Holdaway & Owens, 2015).

Sixty-four percent of teachers report having used home note interventions, in both general and special education contexts, with high levels of acceptability (Chafouleas, Riley-Tillman, & Sassu, 2006). High levels of acceptability have also been found for both parents and students (Galloway & Sheridan, 1994; Jurbergs, Palcic, & Kelley, 2010;

Knorr, 2015; LeBel et al., 2012). In addition, 53% of school psychologists report moderate to frequent use and high acceptability of home note interventions (Riley-Tillman et al, 2008). Research suggests that the home note is widely used as both an intervention and progress-monitoring tool, and considered socially valid by teachers, parents, and school psychologists.

Considerations for Implementation

Vannest and colleagues (2011) outline five specific steps to create and implement an effective home note intervention. The first guideline is to identify specific target behaviors, which may include academic and behavioral skills (Chafouleas, Britner, & Simonsen, 2012). Each target behavior should have positively-worded operational definitions, and be more global to capture multiple areas of impaired functioning (Chafouleas, et al., 2013; Riley-Tillman et al., 2009; Volpe & Fabiano, 2013). The second guideline is to determine the settings and frequency with which behaviors will be assessed. It is recommended that behaviors be monitored over several short time periods throughout an entire school day, as longer and broader applications are associated with larger intervention effects (Fabiano et al., 2009; Kelley & Palcic, 2008; Riley-Tillman et al., 2011; Vannest et al., 2010).

The third step is to determine a rating system. It is recommended that qualitative scales be used to improve efficiency, flexibility, rating accuracy, social validity, and intervention effectiveness (Vannest et al., 2010; Volpe & Fabiano, 2013). Additionally, it is recommended that qualitative scales include at least six rating categories to maximize the reliability of ratings and sensitivity to student progress over time (Chafouleas, Christ,

& Riley-Tillman, 2009; Vannest et al., 2011).

The fourth step is to conduct reliability assessments to evaluate the similarity of ratings between sources. It is generally recommended that a reliability check be conducted for at least 20% of every teacher home note rating, which could involve a weekly SDO (Vannest et al., 2011). Further, reliability assessments should be conducted collaboratively among several parties to increase intervention effectiveness (Vannest et al., 2010). The fifth step is to establish a regular and consistent mode of home-school communication. Parental involvement is considered best practice in the implementation of school-based interventions and is associated with improved academic, behavioral, and social outcomes (Kelley, 1990; National Association of School Psychologists, 2012; Vannest et al., 2010).

Another essential component of home note interventions are consequences contingent on desired behavioral performance (Frafjord-Jacobson et al., 2013). Generally speaking, intervention effects are only shown when performance feedback is linked with consequences, when consequences are linked to desired behaviors, and when consequences are implemented consistently (Atkeson & Forehand, 1979; Jurbergs, Palcic, & Kelley, 2010; Kelley & Palcic, 2008; Volpe & Fabiano, 2013).

Controversies

There are a number of controversies related to home note interventions. The first controversy relates to reinforcement and intrinsic motivation. Results of a meta-analysis conducted by Deci, Koestner, and Ryan (1999) suggested reinforcement had strong detrimental effects on intrinsic motivation. However, meta-analyses conducted by

Cameron and Pierce (1994) and Cameron, Banko, and Pierce (2001) found no negative effects of reinforcement on motivation. In fact, results suggested reinforcement improves and maintains motivation over time and increases engagement in nonpreferred activities. This was particularly true of praise, which was associated with the most significant increases in motivation. Motivation is consistently linked to success on meaningful tasks and regular performance feedback (Chance, 1992). Home notes provide students with frequent school-based performance feedback on their school performance and reinforce behavioral expectations.

The second controversy relates to the environmental contexts in which consequences are provided. Home-based consequences have a number of benefits including greater parental involvement, more opportunities for skill generalization, a wider variety of reinforcers not feasible at school, and more positive parenting practices (Budd et al., 1981; DuPaul, 1991; Frafjord-Jacobson et al., 2013; Kelley, 1990; Kelley & Carper, 1988). However, home-based consequences are associated with a number of drawbacks, which can include inconsistent delivery of consequences, lack of resources to provide motivating reinforcers, and delayed reinforcement (Barth, 1979; Rhode, Jenson, & Reavis, 2009). As a result, it is recommended that home-based contingencies either be replaced by or serve as a supplement to existing school-based consequences in order to maximize intervention effects (Johnson, 2008; Owens et al., 2012).

The third controversy relates to the additive benefits of response cost. Studies conducted by McCain and Kelley (1994) and Kelley and McCain (1995) found that home notes with response cost were more effective and more acceptable by parents and teachers. However, Jurbergs, Palcic, and Kelley (2007) found equal effects for home

notes with and without response cost procedures. Although it remains unclear whether response cost procedures provide additive intervention effects, this component is highly acceptable to parents and teachers, which may enhance treatment fidelity.

The Electronic Daily School Note Intervention Package

The Electronic Daily School Note intervention package is comprised of research-based components and based on several best-practice guidelines for implementation. The Electronic Daily School Note itself was designed following guidelines established by Knorr (2015), Cooper (2010), and Chafouleas, Christ, and Riley-Tillman (2009). The target behavior of on-task and corresponding operational definition were global and positively stated to help facilitate high teacher rating accuracy (Chafouleas et al., 2013; Riley-Tillman et al., 2009; Volpe & Fabiano, 2013). On-task behavior was assessed via qualitative scales with 11 rating categories to help maximize intervention effects, acceptability, and sensitivity to student progress over time (Chafouleas et al., 2009; Vannest et al., 2011; Vannest et al., 2010). Each Electronic Daily School Note rating took 10 s or less to complete, corresponding with previous research estimates (Fabiano et al., 2009). Reliability assessments were conducted for 41% of total teacher Electronic Daily School Note ratings, exceeding best practice guidelines for maintaining rating accuracy (Vannest et al., 2011; Vannest et al., 2010).

The Electronic Daily School Note intervention package also incorporates training sessions for teachers, parents, and participants. Specifically, teachers engaged in a brief orientation session with the researcher, which focused on training, practice, and feedback on the use of DBR and Electronic Daily School Note procedures. This form of teacher

training is associated with higher rating accuracy, treatment fidelity, and likelihood of intervention adoption (Chafouleas et al., 2012; Holdaway & Owens, 2015; LeBel et al., 2010; Vujnovic et al., 2013). Parents engaged in a brief orientation session with the researcher focused on training, practice, and feedback on Electronic Daily School Note procedures. This form of parent training and daily involvement is associated with larger intervention effects, acceptability, and intervention fidelity (Grady, 2013; Knorr, 2015; Vannest et al., 2010). Both parents and teachers engaged in a brief booster session to review intervention procedures. Follow-up consultation meetings such as these have been shown to maintain parent and teacher treatment fidelity long-term (Vujnovic et al., 2013). Participants also engaged in a brief orientation session with the researcher focused on training, modeling, and practice of Electronic Daily School Note intervention procedures. Participants had the ability to customize several reinforcement components to maximize student interest and investment in the intervention, and intervention effectiveness (Jenson & Reavis, 1996; Volpe & Fabiano, 2013).

Additionally, the Electronic Daily School Note intervention package incorporates contingent school-based consequences, which are viewed as necessary components of home note interventions to produce meaningful behavioral change (Atkeson & Forehand, 1979; Johnson, 2008; Jurbergs, Palcic, & Kelley, 2010; Volpe & Fabiano, 2013). Both on-task behavior and parent review of the Electronic Daily School Note were directly reinforced during Reward Days, which occurred randomly approximately three times each week during the intervention phase. Reward Days included the use of an individualized Rewards Menu, Reward Spinner, Mystery Motivator, and Chart Moves system to promote participant motivation and investment (Jenson & Reavis, 1996; Jenson,

Rhode, & Reavis, 1995; Jenson, Rhode, & Reavis, 2009).

Study Findings

The purpose of the current study was to replicate and extend Knorr's (2015) research evaluating the effectiveness of the Electronic Daily School Note intervention package with a school-based direct incentive component for on-task behavior and parent review. The current study was conducted with four students at one public elementary school. Teacher ratings on the Electronic Daily School Note were compared with results of independent direct observation probes to assess the similarity of ratings. The study also evaluated the consistency with which parents reviewed the Electronic Daily School Note with their child. Parent, teacher, and participant feedback and social validity ratings were also evaluated.

Results indicate the Electronic Daily School Note intervention package produced increased rates of on-task behavior for all participants. At baseline, the average rate of on-task behavior for all participants was 40%, and was 73% during the intervention phase. This represents a 33% increase from the baseline phase across all study participants. The average baseline to intervention Tau-U was .90 and the average baseline to intervention IRD was .88, indicating large to very large intervention effects (Parker, Vannest, & Brown, 2009; Vannest & Ninci, 2015). All participants showed a large increase in their level of on-task behavior during the intervention phase as compared to baseline. All participants' rates of on-task behavior remained above that observed during baseline at a three-week follow-up.

Observational data collected during the baseline phase indicate a significant

discrepancy between participant rates of on-task behavior and that of their same-sex classroom peers. The average baseline rate of on-task behavior for all participants was 40%, while that of their same-sex classroom peers was 83%. The difference in on-task behavior between participants and their same-sex classroom peers decreased from 43% at baseline to 11% during the intervention phase. Results indicate participants' and peers' rates of on-task behavior were similar during the intervention phase.

Correlational coefficients for teacher Electronic Daily School Note ratings and direct observation data were at or above .70 and were significant at the .05 level. These results indicate a high level of agreement in the estimation of on-task behavior via systematic direct observation and teacher ratings on the Electronic Daily School Note.

Results indicate the Electronic Daily School Note produced increased rates of math problem completion for all participants. At baseline, participants completed an average of 31 problems, and completed an average of 49 problems during the intervention phase. This represents a 24% increase in the number of problems completed from baseline. The average baseline to intervention Tau-U was .65 and the average baseline to intervention IRD was .67, indicating medium to large intervention effects (Parker, Vannest, & Brown, 2009; Vannest & Ninci, 2015). All participants showed an increase in their rate of math problem completion during the intervention phase as compared to baseline. However, these effects were maintained for only Participant 1 at a three-week follow-up.

Results also indicate the Electronic Daily School Note produced increased rates of math problem accuracy for all participants. At baseline, participants completed an average of 25 problems correctly, and completed 40 problems correctly during the

intervention phase. This represents a 21% increase in the number of problems completed correctly from baseline. The average baseline to intervention Tau-U was .70 and the average baseline to intervention IRD was .71, indicating large intervention effects (Parker, Vannest, & Brown, 2009; Vannest & Ninci, 2015). All participants showed an increase in their math problem accuracy during the intervention phase as compared to baseline. However, these effects were maintained for only Participant 1 at a three-week follow-up.

The average rate of parent review was 84% across the intervention phase, indicating parents reviewed Electronic Daily School Note data with their child on a consistent basis. Additionally, parents and participants rated the Electronic Daily School Note intervention package as both highly acceptable, effective, and enjoyable. Teacher social validity ratings were mixed. Teachers generally had less optimism about intervention potency, generalizability, and maintenance; however, teachers rated the Electronic Daily School Note as a practical, acceptable, and suitable intervention for improving on-task behavior. All parents and teachers indicated the Electronic Daily School Note intervention package improved their home-school collaboration. Overall, the Electronic Daily School Note demonstrated adequate to high social validity.

Relation to Previous Research

Results of the current study suggest the Electronic Daily School Note was an effective intervention for improving classroom behavior, academic performance, and home-school collaboration. The finding that the Electronic Daily School Note increased on-task behavior when directly reinforced is congruent with previous research. Atkeson and Forehand (1979) found that home note intervention effects were shown only when

teacher feedback was linked with contingencies, suggesting the critical nature of direct reinforcement. Additionally, Jurbergs, Palcic, and Kelley (2010) found larger intervention effects for home notes used with contingent consequences than for home notes without contingencies.

In a meta-analysis of studies from 1970 to 2007, Vannest and colleagues (2010) found that home notes had an overall IRD of .61 and an IRD of .54 for on-task behavior specifically, which both represent medium effects. In comparison, the current study found an overall IRD of .88, which is a large effect and larger than that reported by Vannest and colleagues (2010). The difference in effect size estimates may be partially attributable to variations in the contingency management systems used in each study. The current study used a combined type of reinforcement, as both on-task behavior and parent review were directly reinforced. The meta-analysis conducted by Vannest and colleagues (2010) did not specifically examine or describe the reinforcement systems used in the reviewed studies. The type of consequence system used may have an unknown impact on intervention effects. However, the IRD of .88 found in the current study approximated the IRD effect sizes found by Vannest and colleagues (2010) for high levels of parental involvement (.90) and use of qualitative scales (.86). Results of the current study extend the literature on the effectiveness of home notes for improving classroom behavior when on-task behavior is directly reinforced.

The current finding that the Electronic Daily School Note increased math work completion and accuracy also corresponds with existing research. Galloway and Sheridan (1994) found that students who received a home note intervention increased math work completion by 47%, while math accuracy increased by 44%. Blechman and colleagues

(1981) found a 10% increase in math work completion and a 10% in work accuracy after participants received a home note intervention. In contrast, the current study found increases of 24% in math work completion and 21% in math accuracy. However, academic skills such as math work completion and accuracy were not directly reinforced in the current study. Results of the current study add to existing research demonstrating the effectiveness of home notes for improving math performance when academic skills were not directly reinforced.

Results of the current study also add to the existing body of research that home notes improve home-school collaboration. Barth (1979) first reported that home notes increase communication between parents and teachers. This assessment was replicated in later years in studies conducted by Blechman and colleagues (1981) and Galloway and Sheridan (1994). In the current study, all parents and teachers agreed that the Electronic Daily School Note increased their level of home-school collaboration. This finding extends research that home notes are effective for facilitating daily home-school communication and parental involvement in school-based interventions.

The current study's finding that the Electronic Daily School Note intervention was acceptable by parents, teachers, and participants is also consistent with previous research. Smith, McLaughlin, and Williams (1983) were among the first to report the high degree of acceptability by parents, teachers, and students. However, most studies have not gathered social validity data from teacher, parent, and participant standpoints (Gable, 2002; McGoey, Prodan, & Condit, 2007; Williams et al., 2012). In the current study, parents reported positive perceptions about intervention applicability, flexibility, effectiveness, and recommended use, but wanted more teacher feedback and individual

student time.

In the current study, teachers reported mixed perceptions about the intervention. Although they generally had less optimism about intervention effectiveness, maintenance, and generalization, teachers had positive perceptions about intervention suitability, applicability to other contexts, procedures, likelihood of future use, and recommended use to other teachers. Teachers reported disliking the short intervention application of 15 min each day. Students reported positive perceptions about intervention procedures and effects, but did not like parents seeing ratings falling below their on-task goal and perceived teacher strictness in ratings. Reward Days were rated as both highly enjoyable and useful throughout the intervention, even when participants did not earn a prize. The current study adds to the current literature base by providing acceptability data from all stakeholders.

According to treatment fidelity checklists used throughout the study, the Electronic Daily School Note intervention package was implemented with 100% fidelity. This has implications for clinicians who may wish to implement the Electronic Daily School Note intervention in applied settings. Results indicate the Electronic Daily School Note intervention can be implemented as described when fidelity checklists are used as part of the program.

With respect to specific studies using electronic components, Gable (2002) was the first to evaluate the effectiveness of a daily emailed home note for decreasing disruptive behavior. Similar to the current study, results suggested the intervention was effective at improving classroom behavior in all participants. However, the daily emailed home note was sent by the researcher rather than by teachers. As a result, teachers had no

direct role in communicating with parents on a daily basis, which differs from that of the current study. However, Gable (2002) did not specifically assess the impact on academic performance and did not collect follow-up data. Therefore, it is not possible to compare intervention and maintenance effects with those of the current study.

Williams and colleagues (2012) evaluated the effectiveness of a daily emailed home note to reduce disruptive behavior. Like the current study, results suggested the intervention was effective at improving classroom behavior. The intervention was implemented for three weeks, whereas the current study had an intervention phase of four to five weeks. This suggests that positive intervention effects may be obtained with shorter intervention phase durations. However, Williams and colleagues (2012) did not evaluate the impact of the intervention on academic performance and did not collect follow-up data. Therefore, it is not possible to compare intervention and maintenance effects with those of the current study.

Knorr (2015) was the first to evaluate the effectiveness of a Google-based electronic home note intervention. Results of the current study and those obtained by Knorr (2015) are generally congruent. Both Knorr (2015) and the current study indicate nearly doubled rates of on-task behavior during the intervention phase, effects which were maintained at several weeks follow-up. Effect sizes for on-task behavior obtained by Knorr (2015) and in the current study were very similar. For on-task behavior, Knorr (2015) reported an overall NAP value of .88, while the current study obtained an overall Tau-U value of .90 and an IRD of .88. Additionally, Knorr (2015) and the current study found the same overall rate of parent review (84%), similar parent and participant social validity ratings, and similar significant positive correlations between teacher ratings of

on-task behavior and results obtained via direct observation.

There are also several differences between Knorr (2015) and the current study, which should be noted. Knorr (2015) found that consistency of parent review produced increased rates of on-task behavior when only parent review was directly reinforced. The current study directly reinforced both on-task behavior and parent review. The combined reinforcement used in the current study makes any potential relationship between parent review and on-task behavior less clear. In addition, Knorr (2015) found increases of 8% in math work completion and 6% in math work accuracy. In contrast, the current study found increases of 24% in math work completion and 21% increase in math work accuracy. Additionally, the current study found participant rates of on-task behavior approximated that of same-sex classroom peers during the intervention, whereas Knorr (2015) did not find comparable rates of on-task behavior between participants and classroom peers.

Taken together, results of the current study are congruent with and extend previous research on the effectiveness of home notes for improving on-task behavior, academic performance, and home-school collaboration. The current study adds to the existing literature base by providing follow-up data on maintenance effects, participant social validity ratings, narrative consumer satisfaction information, and effect size data to summarize intervention effects.

Study Limitations

The current study had several limitations that should be noted for future research considerations. The first limitation involves the small number of total participants. The

study was conducted in one public elementary school with four male participants in either the fourth or fifth grade. Therefore, results have limited generalizability to students from other demographic groups and in other educational settings. Similarly, teacher Electronic Daily School Note ratings were based only on a 15-min independent math work time. Therefore, results may have limited generalizability to other academic subjects and other times of day.

A second limitation involves potential practice effects. During the study, each participant completed curriculum-based math worksheets comprised of similar math problems. The repetition of completing these worksheets throughout study phases and increased skill proficiency may have impacted the intervention effects for math work completion and accuracy.

A third limitation involves possible reactivity effects. The researcher and a research assistant observed each participant in their general education classroom during an independent math work time throughout study phases. During the baseline phase, participants were not aware of any study components. During the intervention phase, participants were aware of their inclusion in the study and became familiar with the researcher during Reward Days. Therefore, participants may have altered their behavior in the presence of the researcher during the intervention and follow-up phases. Likewise, teachers may have reacted differently in the presence of the researcher and research assistant in their classroom, and may have altered their ratings of participant behavior during the intervention phase. However, it should be noted that a multiple-probe research design was used to minimize the possibility of reactivity effects and that teacher ratings were significantly positively correlated with results of independent direct observation

probes.

A fourth limitation is the potential impact of differences in parent review, praise, and feedback not observed by the researcher. The type and quality of home-based social reinforcement that each participant received may have altered the extent to which intervention effects generalized.

A fifth limitation is a lack of intervention fading procedures. All intervention procedures immediately ceased at the conclusion of the intervention phase. The lack of gradual intervention reduction may have impacted the extent to which intervention effects generalized in the follow-up phase.

A sixth limitation relates to the short duration of the intervention phase of the current study. Owens and colleagues (2012) recommend an optimal dose of at least eight weeks for home note interventions. However, participants in the current study received the Electronic Daily School Note intervention package for four to five weeks.

Future Research

Results of the current study expand the home note intervention literature base. Results and study limitations have implications for future research. In order to better understand generalization effects of the Electronic Daily School Note intervention, it is recommended that future studies be conducted with other age and ethnic groups, in other treatment contexts, in other regions or localities, with other academic subjects, and over longer periods of time. Specifically, future research may wish to examine the efficacy of the Electronic Daily School Note intervention package with students at the preschool or secondary level, living in rural areas, and in specialized classroom settings. It is

recommended that future studies be conducted with participants in separate classrooms and with separate teachers to further reduce possible reactivity effects. Alternatively, observation periods could be video recorded and coded at a later time to help reduce classroom intrusion.

Additionally, future studies may focus on using the Electronic Daily School Note intervention to target multiple academic subjects across an entire school day. It is considered best practice for target behaviors be monitored over several short time periods across an entire day to improve overall student performance (Chafouleas et al., 2005; Riley-Tillman et al., 2011; Volpe & Fabiano, 2013). Intervention applications exceeding one hour per day are also associated with much larger effect sizes (Vannest et al., 2010). Future studies may wish to follow these best practice guidelines by implementing the Electronic Daily School Note intervention via a single global behavior rating or several ratings across an entire school day. Future studies may also wish to follow recommendations made by Owens and colleagues (2012) to apply the intervention for at least eight weeks to help maximize intervention effectiveness before considering discontinuation.

The current study replicated and extended Knorr's (2015) research by directly reinforcing student on-task behavior and parent review of the Electronic Daily School Note. Results demonstrate medium to large intervention effects for math work completion and accuracy when academic performance was not directly reinforced. Future research may wish to explore whether direct reinforcement of both on-task behavior and academic skills, such as work completion and accuracy, may result in larger intervention and maintenance effects for academic performance. In addition, future studies could

consider using a more naturalistic measure of academic performance over time, such as classroom-based work samples or unit tests. More naturalistic measures may be more easily interpretable and socially valid to teachers, parents, and students.

In the current study, parents were asked to refrain from providing tangible reinforcement at home and were coached on how to provide positive feedback to their children. Future research could investigate the differential effects of various forms of parent training formats and home-based reinforcement strategies. Studies by Budd and colleagues (1981) and McGoey, Prodan, and Condit (2007) successfully used home-based consequences to improve school behavior. This additional partnership and investment between stakeholders may further improve home-school collaboration and in turn increase intervention effectiveness (Vannest et al., 2010). Future studies may also consider utilizing a parent intervention manual component, such as previously developed by Galloway and Sheridan (1994), to help support parent intervention fidelity at home.

It is also recommended that future studies identify and implement specific and appropriate intervention fading procedures. These would allow for a greater understanding of the maintenance of intervention effects, especially over longer periods of time. Specific fading strategies might include longer observation periods, fewer or more global ratings, and periodic or weekly submission of the Electronic Daily School Note. Another direction for future research might incorporate self-monitoring components as part of the intervention package or fading strategies. Future studies may also wish to incorporate additional booster sessions for a sounder research design and to improve maintenance and generalization effects in both research and clinical practice.

APPENDIX A

CONSENT AND ASSENT FORMS

Parent Consent for Initial Observation

BACKGROUND

The purpose of this study is to increase on-task behavior and improve academic performance of children with high rates of off-task behavior in the classroom. To determine if your child meets criteria for participation in this study, I would like permission for trained school professionals to observe your child in his or her classroom and have their teacher complete a behavioral questionnaire. You may review this questionnaire if you wish.

STUDY PROCEDURES

With your permission, these persons will observe and record the percentage of time that your child spends paying attention to his or her academic work. Your child will be given an individualized math worksheet to complete while they are being observed. Every effort will be made during these observations to set no child apart from the others. The children will know that someone is visiting their class, but will not know that any one child is being observed specifically.

After the observations have been completed, the researcher will contact you and will let your know if your child meets criteria for study participation. Only a limited number of children will be able to participate in the study. If your child meets inclusion criteria, the researcher will explain the procedures involved in the intervention program and invite you to have your child participate in the study. If you choose not to have your child participate or if your child does not meet inclusion criteria, you will still be given the option of having the researcher provide you or your child's teacher with consultation concerning your child's classroom behavior.

Duration: The observations will be conducted during regular school hours while your child completes academic work. Each observation will be 15 minutes long, and a total of five observations are needed across several days. These observations will be conducted over a period of approximately one week.

RISKS

Potential risks involved with class observation include disruption to the class and embarrassment or self-consciousness about having someone watch the class.

BENEFITS

Potential benefits include the opportunity to participate in a research project designed to increase on-task behavior and academic performance in the classroom.

CONFIDENTIALITY

Only your child's first name will be recorded on the observation form. Observation forms of children who do not participate in the study will be destroyed. Methods for maintaining confidentiality of children who do go on to participate in the study will be communicated to you prior to you making a decision regarding being included in the study.

PERSON TO CONTACT

If you have questions, complaints, or concerns about this study, you can contact Laura Lopach (XXX) XXX-XXXX. If you feel you have been harmed as a result of participation, you may contact my faculty advisor, Dr. William R. Jenson, at (XXX) XXX-XXXX. If Dr. Jenson is unavailable, please leave a message and your call will be returned as soon as possible.

Institutional Review Board: If you have questions regarding your rights as a research participant, please contact the Institutional Review Board (IRB). You may also contact the IRB if you have questions, complaints or concerns that you feel you cannot discuss with the investigator. The University of Utah IRB may be reached by phone at (801) 581-3655 or by e-mail at irb@hsc.utah.edu.

Research Participant Advocate: You may also contact the Research Participant Advocate (RPA) by phone at (801) 581-3803 or by email at participant.advocate@hsc.utah.edu.

VOLUNTARY PARTICIPATION

It is your decision whether to allow your child to take part in this study. Refusal to allow your child to participate or the decision to withdraw your child from this research will involve no penalty or loss of benefits to which your child is otherwise entitled, nor will it affect your or your child's relationship with the investigator.

Withdrawal: After giving initial consent, consent can be withdrawn at any time by sending a written note to your child's teacher asking that no further observations be done on your child and/or calling me at (406) 459-8532. If you withdraw consent, any observation forms that have already been completed on your child will be immediately destroyed.

COSTS AND COMPENSATION TO PARTICIPANTS

There are no costs and is no compensation for study participation. The anticipated conclusion of this study is Spring 2016. After the study is completed, I would be happy to share the results with you, as well as any possible recommendations for your child.

Your permission to observe your child in class will be greatly appreciated!

Laura Lopach
Graduate Student in Educational Psychology
University of Utah

CONSENT

By signing this consent form, I confirm that I have read the information in this parental permission form and have had the opportunity to ask questions. I will be given a signed copy of this parental permission form. I voluntarily agree to allow my child to be observed in his or her classroom as part of this study.

_____
Child's Name

_____	_____	_____	_____
Parent/Guardian's Name	Relationship to Child for Parent/ Guardian	Parent/Guardian's Signature	Date

_____	_____	_____
Name of Person Obtaining Authorization and Consent	Signature of Person Obtaining Authorization and Consent	Date

Parent Consent for Study Participation

BACKGROUND

The purpose of this study is to improve your child's on-task behavior and academic performance in the classroom. This study will involve having your child's behaviors recorded on an electronic version of a school-home note. A school-home note is a communication system designed to allow the school to rate a student on their classroom behavior and share this information with the student's home. Throughout the study, we will be calling this system the "Electronic Daily School Note." Your child's regular education math teacher will give ratings on the Electronic Daily School Note only during independent work time. You should review these ratings with your child every day. The researcher or a research assistant will also review these ratings approximately three times a week with your child. One goal of this study is to increase your child's ability to remain on-task in the classroom by having them learn and model appropriate on-task behavior, and review their ratings with you, the researcher, and a research assistant. By increasing the time that your child remains focused on his or her work, it is also the goal of this study to enhance your child's academic performance.

STUDY PROCEDURES

Participating in the study would include the following: 1) continued classroom observations, 2) taking your child to a quiet room to review their teacher's ratings of their behavior, 3) your child completing individualized math worksheets based on their abilities and their teacher's recommendations, 4) your child receiving skill instruction, coaching, encouragement, and reinforcement from the researcher or a research assistant, 5) making copies of your child's math worksheets, 6) the researcher or a research assistant periodically consulting with the teacher concerning your child's classroom behavior, 7) your child filling out a brief questionnaire about being in the study, 8) you filling out a brief questionnaire about the study, and 9) having the classroom teacher fill out a brief questionnaire about the study. You may preview these questionnaires if you wish.

Meeting with your child to review their ratings with the researcher or a research assistant will involve your child coming to an office for about 5 minutes a day, approximately 3 times a week for 5 weeks. These sessions will include reviewing your child's behavior ratings, coaching behavioral expectations, tracking your child's behavior on their individual graph, and receiving reinforcement for your review of Electronic Daily School Note ratings and meeting their behavior goal. These times will take place before school begins or during a time at which the teacher agrees is appropriate. During these weeks, your child will be monitored with the Electronic Daily School Note. At the end of the 5 weeks, your child, their teacher, and you will be asked to fill out a brief questionnaire about the study. This should only take about 10 minutes. Your child will be observed in the classroom multiple times before and during the weeks that his or her behaviors are being monitored through the Electronic Daily School Note. Follow-up

observations of your child will be conducted approximately 2 weeks after your child's last Electronic Daily School Note observation.

RISKS

Participation in this study is completely optional, and at your own discretion. If you think you would like your child to participate, I would appreciate it if you would discuss it with him/her and include him/her in making this decision. The major disadvantage is your child feeling singled out as being inattentive or disruptive. Your child may also feel uncomfortable about missing a part of a classroom activity if a meeting before school does not occur, but collaboration between the researcher and your child's teacher will be made to ensure that no instructional time will be lost due to these meetings.

BENEFITS

Possible benefits from participating in the study include focusing more on school work, which could in turn help them feel better about themselves and school, as well as the possibility of increasing his or her academic performance.

CONFIDENTIALITY

Observation forms will only contain the child's first name. After the study is completed, data will be analyzed and your child will be assigned a numbered name such as "Participant 1" or "Participant 2", etc. Names on the original observation recording forms and the math worksheets collected during the study will be changed to their assigned number name, and your child will only be referred to by their assigned number name when reporting the results of this study. Through teacher observations on the Electronic Daily School Note, names will be changed to their assigned number name following the conclusion of the study. With the exception of the original consent form, no documents will be kept that contain your child's name. The researcher will keep the consent forms secure in a locked file in her office.

PERSON TO CONTACT

If you have questions, complaints, or concerns about this study, you can contact Laura Lopach at (XXX) XXX-XXXX. If you feel you have been harmed as a result of participation, please call my faculty advisor Dr. William R. Jenson at (XXX) XXX-XXXX. If Dr. Jenson is unavailable, please leave a message and your call will be returned as soon as possible.

Institutional Review Board: Contact the Institutional Review Board (IRB) if you have questions regarding your rights as a research participant. Please also contact the IRB if you have questions, complaints or concerns that you do not feel you can discuss with the investigator. The University of Utah IRB may be reached by phone at (801) 581-3655 or by e-mail at irb@hsc.utah.edu.

Research Participant Advocate: You may also contact the Research Participant

Advocate (RPA) by phone at (801) 581-3803 or by email at participant.advocate@hsc.utah.edu.

VOLUNTARY PARTICIPATION

It is up to you to decide whether to allow your child to take part in this study. Refusal to allow your child to participate or the decision to withdraw your child from this research will involve no penalty or loss of benefits to which your child is otherwise entitled nor will it affect you or your child's relationship with the investigator.

Withdrawal: After giving initial consent, consent can be withdrawn at any time by sending a written note to your child's teacher asking that no further observations be done on your child and/or calling me at (XXX) XXX-XXXX. If you withdraw consent, any observation forms that have already been filled out on your child will be destroyed immediately.

COSTS AND COMPENSATION TO PARTICIPANTS

There are no costs or compensation for study participation. The anticipated conclusion of this study is Spring 2016. After the study is completed, I would be happy to share the results with you, as well as any possible recommendations for your child.

CONSENT

By signing this consent form, I confirm that I have read the information in this parental permission form and have had the opportunity to ask questions. I will be given a signed copy of this parental permission form. I voluntarily agree to allow my child to take part in this study.

_____
Child's Name

_____	_____	_____	_____
Parent/Guardian's Name	Relationship to Child	Parent/Guardian's Signature	Date

_____	_____	_____
Name of Person Obtaining Authorization and Consent	Signature of Person Obtaining Authorization and Consent	Date

Teacher Consent for Study Participation

BACKGROUND

The purpose of this study is to improve students' on-task behavior and academic performance in the classroom. This study will involve having each participant's behaviors rated through the use of an electronic daily school note. A daily school note is a communication system designed to allow teachers to rate a student on their classroom behavior and share this information with the student's parents or guardians. Throughout the study, we will be calling this the "Electronic Daily School Note." As part of the study, each participant will review your ratings on the Electronic Daily School Note with their parents and the researcher or a research assistant. The Electronic Daily School Note will only be used while participants are working on independent math work. One goal of this study is to increase each participant's ability to remain on-task in class by having them learn and model appropriate on-task behavior, and review your ratings of their class behavior with other people. By increasing the time each participant remains focused on his or her work, it is also the goal of this study to enhance the participant's academic performance.

STUDY PROCEDURE

Your participation in this study would include the following: 1) you rating your student's in-class behavior through the use of the Electronic Daily School Note during an independent math work time, 2) your student completing individualized curriculum-based math worksheets during an independent work time, 3) scheduled observations conducted in your classroom during an independent math work time, 4) your student leaving the classroom occasionally to receive coaching, encouragement, and reinforcement if the student is unable to meet before school begins, 5) you having two brief meetings with the researcher concerning the intervention program, and 6) you completing a brief questionnaire concerning the participant and a brief questionnaire concerning the intervention.

Throughout the study, you will provide your student with individualized curriculum-based math worksheets to be completed during independent math work time. Office sessions will not occur during the first week. After this first week and if the participant qualifies for the study, you will monitor the student with the Electronic Daily School Note. Office sessions will begin at this time. These will involve your student coming to an office for about 5 minutes a day, about three times a week for approximately 5 weeks. These sessions will include reviewing your student's behavior ratings as rated by you, coaching behavioral expectations, tracking your student's behavior on their individual graph, and receiving reinforcement for meeting their goal and reviewing their behavioral ratings at home. These office sessions will take place before school begins or during a time at which you agree is appropriate. At the end of the 5 weeks, your student, their parent, and you will be asked to fill out a brief questionnaire about the study. This should only take about 10 minutes. Your participant will be observed in the classroom

multiple times before and during the weeks that his or her behaviors are monitored with the Electronic Daily School Note. Follow-up observations of your participant will be conducted approximately 3 weeks after your participant's last Electronic Daily School Note observation. The participant will once again complete the curriculum based math worksheets while being observed by the researcher or a research assistant.

RISKS

Participation in this study is completely optional, and at your own discretion. Participation in the study may result in loss of time due to completion of the Electronic Daily School Note, the two brief meetings with the researcher, and completion of the questionnaires.

BENEFITS

Possible benefits from participating in the study include increases in your participant's ability to focus on schoolwork, which could in turn help them to feel better about their abilities and school. Increased time spent focused on schoolwork could also lead to increases in academic performance.

PERSON TO CONTACT

If you have questions, complaints, or concerns about this study, you can contact Laura Lopach at (XXX) XXX-XXXX. If you feel you have been harmed as a result of participation, you may call my faculty advisor Dr. William R. Jenson at (XXX) XXX-XXXX. If Dr. Jenson is unavailable, please leave a message and your call will be returned as soon as possible.

Institutional Review Board: Contact the Institutional Review Board (IRB) if you have questions regarding your rights as a research participant. Please also contact the IRB if you have questions, complaints or concerns that you do not feel you can discuss with the investigator. The University of Utah IRB may be reached by phone at (801) 581-3655 or by e-mail at irb@hsc.utah.edu.

Research Participant Advocate: You may also contact the Research Participant Advocate (RPA) by phone at (801) 581-3803 or by email at participant.advocate@hsc.utah.edu.

VOLUNTARY PARTICIPATION

It is up to you to decide whether to take part in this study. Refusal to participate or the decision to withdraw from this research will involve no penalty or loss of benefits to which you are otherwise entitled. This will not affect your relationship with the investigator.

COSTS AND COMPENSATION TO PARTICIPANTS

There are no costs or compensation for study participation. The anticipated conclusion of this study is Spring 2016. After the study is completed, I would be happy to share the results with you, as well as any possible recommendations for your student.

CONSENT

By signing this consent form, I confirm that I have read the information in this consent form and have had the opportunity to ask questions. I will be given a signed copy of this consent form. I voluntarily agree to take part in this study.

_____	_____	_____
Teacher's Name	Teacher's Signature	Date
_____	_____	_____
Name of Person Obtaining Authorization and Consent	Signature of Person Obtaining Authorization and Consent	Date

Participant Assent to Participate in the Study

Who are we and what are we doing?
We are from the University of Utah. We would like to ask if you would be in a research study. A research study is a way to find out new information about something.

Why are we asking you to be in this research study?
We would like to ask you to be in a research study because we are trying to learn more about how to help students to stay focused on their work and to do better on their assignments.

What happened in the research study?
If you are willing to be in this study and your parents agree, this is what will happen: You will meet with a school professional about three times a week for about five minutes each time. You can meet during the school day at a time your teacher approves. When you are out of class, you will review the ratings given by your teacher of how your behaviors are in class. During the study, your teacher will use an Electronic Daily School Note that will help track your behaviors while you are working on your assignments. Your parents will also review your behaviors with you every night. At times, there will be researchers in your classroom observing the class. At the end of this study, we will ask you questions about how you liked being in this program. These activities will last about 5 weeks.

Will any part of the research study hurt you?
It is possible that being part of this study may make you feel like you are different because it is difficult for you to stay focused on your assignments. You may also feel uncomfortable being removed from your classroom.

Will the research study help you or anyone else?
Being in this study will help us understand if the different activities we do in this study will help students to stay focused on their assignments. Being in this study may also help you to stay focused on the work your teacher gives you, do better on your work, and help you to feel better about your ability to do well at school.

Who will see the information about you?
All of the information from this study will be kept locked up in my office so that only the people helping me with this project will see them. Your name will only be used on papers that people helping on this project will see.

What if you have any questions about the research study?
You can ask any questions that you have about the study. If you have a question later that you didn't think of now, you can call me, Laura Lopach, at (XXX) XXX-XXXX or ask me next time we meet.

Do you have to be in the research study?
If you don't want to be in this study, you don't have to be in it. Remember, being in this study is up to you and no one will be upset if you don't want to be in it. You can change your mind later if you want to stop being in it. Please talk about this with your parents before you decide if you would like to do it. We will also ask your parents to give their permission for you to be in this study. Even if your parents say "yes" you can still decide not to do this.

Consent
I was able to ask questions about this study. Signing my name at the bottom means that I agree to be in this study. My parents or guardians and I will be given a copy of this form after I have signed it.

_____
Printed Name

_____ _____
Sign your name on this line Date

_____
Printed Name of Person Obtaining Assent

_____ _____
Signature of Person Obtaining Assent Date

The following should be completed by the study member conducting the assent process if the participant agrees to be in the study. Initial the appropriate selection:

_____ The participant is capable of reading the assent form and has signed above as documentation of assent to take part in this study.

_____ The participant is not capable of reading the assent form, but the information was verbally explained to him/her. The participant signed above as documentation of assent to take part in this study.

APPENDIX B

QUESTIONNAIRES

Student Name:

Child Information Questionnaire

Please answer the following questions about your child. Answering any of these questions is optional, but the information will be helpful to me when interpreting the results of the study. All information will be kept confidential. And any personally identifying information will be removed.

1. Has your child ever been diagnosed with a learning or attention problem?

   If so, what type?

2. Is your child currently taking any medication?

   If so, what type?

3. Has your child ever received any medication for attention problems?

   If so, what type?

Is there any other information about your child that you feel might be helpful?

Adapted from Knorr (2015)

Parent Intervention Rating Scale

Please evaluate the intervention by circling the number which best describes your agreement or disagreement with each statement. You must answer each question.

1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Slightly Agree	5 Agree	6 Strongly Agree

1.	This was an acceptable intervention for my child's classroom behavior.	1	2	3	4	5	6
2.	Most parents would find this intervention appropriate for behaviors in addition to the one addressed.	1	2	3	4	5	6
3.	The intervention proved effective in changing the child's behavior.	1	2	3	4	5	6
4.	I would suggest the use of this intervention to other parents.	1	2	3	4	5	6
5.	The child's behavior problem was severe enough to warrant the use of this intervention.	1	2	3	4	5	6
6.	Most parents would find this intervention suitable for the behavior addressed.	1	2	3	4	5	6
7.	I would be willing to use this in the home.	1	2	3	4	5	6
8.	The intervention did not result in negative side effects for my child.	1	2	3	4	5	6
9.	The intervention would be an appropriate intervention for a variety of children.	1	2	3	4	5	6
10.	The intervention is consistent with those I have used in the home setting.	1	2	3	4	5	6
11.	The intervention was a fair way to handle the child's classroom behavior.	1	2	3	4	5	6
12.	The intervention is reasonable for the behavior addressed.	1	2	3	4	5	6
13.	I like the procedures used in the intervention.	1	2	3	4	5	6
14.	This intervention was a good way to handle this child's behavior.	1	2	3	4	5	6
15.	Overall, the intervention was beneficial for the child.	1	2	3	4	5	6
16.	The intervention quickly improved the child's classroom behavior.	1	2	3	4	5	6
17.	The intervention will produce a lasting improvement in the child's behavior.	1	2	3	4	5	6
18.	The intervention improved the child's behavior to the point that it would not noticeably deviate from other classmates' behavior.	1	2	3	4	5	6
19.	Soon after using the intervention, the teacher would notice a positive change in the behavior.	1	2	3	4	5	6
20.	The child's behavior will remain at an improved level even after the intervention is	1	2	3	4	5	6

discontinued.						
21. Using the intervention should not only improve behavior in the classroom, but also in other settings (e.g., other classrooms, home).	1	2	3	4	5	6
22. When comparing this child with a well-behaved peer before and after use of the intervention, the child's and the peer's behavior are more alike after the intervention.	1	2	3	4	5	6
23. The intervention produced enough improvement in the child's behavior so the behavior no longer is a problem in the classroom.	1	2	3	4	5	6
24. Other behaviors related to the behavior addressed also are likely to be improved by the intervention.	1	2	3	4	5	6
25. The intervention improved my collaboration with the child's teacher	1	2	3	4	5	6

What are the aspects of this intervention that you like?

What, if anything, did you not like about the intervention?

What did you like about the Electronic Daily School Note Package?

What, if anything, did you not like about the Electronic Daily School Note Package?

Adapted from the BIRS (Elliot & Treuting, 1991) and Knorr (2015)

Teacher Intervention Rating Scale

Please evaluate the intervention by circling the number which best describes your agreement or disagreement with each statement. You must answer each question.

1	2	3	4	5	6
Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree

1.	This was an acceptable intervention for the child's problem behavior.	1	2	3	4	5	6
2.	Most teachers would find this intervention appropriate for behavior problems in addition to the one addressed.	1	2	3	4	5	6
3.	The intervention proved effective in changing the child's problem behavior.	1	2	3	4	5	6
4.	I would suggest the use of this intervention to other teachers.	1	2	3	4	5	6
5.	The child's behavior problem was severe enough to warrant the use of this intervention.	1	2	3	4	5	6
6.	Most teachers would find this intervention suitable for the behavior problem addressed.	1	2	3	4	5	6
7.	I would be willing to use this in a classroom setting.	1	2	3	4	5	6
8.	The intervention did not result in negative side effects for this child.	1	2	3	4	5	6
9.	The intervention would be an appropriate intervention for a variety of children.	1	2	3	4	5	6
10.	The intervention is consistent with those I have used in classroom settings.	1	2	3	4	5	6
11.	The intervention was a fair way to handle the child's problem behavior.	1	2	3	4	5	6
12.	The intervention is reasonable for the behavior problem addressed.	1	2	3	4	5	6
13.	I like the procedures used in the intervention.	1	2	3	4	5	6
14.	This intervention was a good way to handle this child's behavior problem.	1	2	3	4	5	6
15.	Overall, the intervention was beneficial for the child.	1	2	3	4	5	6
16.	The intervention quickly improved the child's behavior.	1	2	3	4	5	6
17.	The intervention will produce a lasting improvement in the child's behavior.	1	2	3	4	5	6
18.	The intervention improved the child's behavior to the point that it would not noticeably deviate from other classmates' behavior.	1	2	3	4	5	6
19.	Soon after using the intervention, a teacher would notice a positive change in the problem	1	2	3	4	5	6

behavior.						
20. The child's behavior will remain at an improved level even after the intervention is discontinued.	1	2	3	4	5	6
21. Using the intervention should not only improve behavior in the classroom, but also in other settings (e.g., other classrooms, home).	1	2	3	4	5	6
22. When comparing this child with a well-behaved peer before and after use of the intervention, the child's and the peer's behavior are more alike after the intervention.	1	2	3	4	5	6
23. The intervention produced enough improvement in the child's behavior so the behavior no longer is a problem in the classroom.	1	2	3	4	5	6
24. Other behaviors related to the problem behavior also are likely to be improved by the intervention.	1	2	3	4	5	6
25. The intervention improved my collaboration with the child's parents.	1	2	3	4	5	6

What are the aspects of this intervention that you like?

What, if anything, did you not like about the intervention?

What did you like about the Electronic Daily School Note Intervention Package?

What, if anything, did you not like about the Electronic Daily School Note Intervention Package?

Adapted from the BIRS (Elliot & Treuting, 1991) and Knorr (2015)

Child Intervention Rating Scale

Please evaluate the intervention by circling the number which best describes your agreement or disagreement with each statement. You must answer each question.

1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Slightly Agree	5 Agree	6 Strongly Agree

1.	Teachers using the Electronic Daily School Note seemed fair.	1	2	3	4	5	6
2.	Reviewing my behaviors with my parents was fair.	1	2	3	4	5	6
3.	Reviewing my behaviors with the school psychologist was fair.	1	2	3	4	5	6
4.	Having the teacher use the Electronic Daily School Note caused problems with my friends.	1	2	3	4	5	6
5.	There are better ways to help me stay focused on my work.	1	2	3	4	5	6
6.	This would be a good program to use with other kids.	1	2	3	4	5	6
7.	I like this program to help me stay focused.	1	2	3	4	5	6
8.	I think the Electronic Daily School Note helped me do better in school.	1	2	3	4	5	6

What did you like about the Electronic Daily School Note Package?

What didn't you like about the Electronic Daily School Note Package?

What did you like about this program?

What didn't you like about this program?

Adapted from the CIRP (Elliot, 1986) and Knorr (2015)

APPENDIX C

OBSERVATION FORM

Tough Kid Tool Box

REPRODUCIBLE 7-8

Behavior Observation Form

Target Student _____ M/F _____ Grade _____

School _____ Teacher _____ Date _____

Observer _____ Position _____

Class Activity _____

❑ Teacher-directed whole class ❑ Teacher-directed small class ❑ Independent work session

DIRECTIONS: Each box represents a ten-second interval. Observe each student **once**, then record the data. This is a partial interval recording. If possible, collect data for the full 15 minutes under a teacher-directed or independent condition. If this is not possible, put a slash when the classroom condition changes. **Classmates observed must be the same sex as the target student.**

	1						2						3					
Target Student																		
Peer*																		
	4						5						6					
Target Student																		
Peer*																		
	7						8						9					
Target Student																		
Peer*																		
	10						11						12					
Target Student																		
Peer*																		
	13						14						15					
Target Student																		
Peer*																		

*Randomly selected classmate of the same sex

NOTE: To observe class, begin with the first same-sex student in row 1. Record each subsequent same-sex student in following intervals. Data reflect an average of classroom behavior. **Skip unobservable students.**

ON-TASK CODES: Eye contact with teacher or task and performing the requested task.

OFF-TASK CODES:

T = **Talking Out/Noise:** Inappropriate verbalization or making sounds with object, mouth, or body.
O = **Out of Seat:** Student fully or partially out of assigned seat without teacher permission.
I = **Inactive:** Student not engaged with assigned task and passively waiting, sitting, etc.
N = **Noncompliance:** Breaking a classroom rule or not following teacher directions within 15 seconds.
P = **Playing With Object:** Manipulating objects without teacher permission.
\+ = **Positive Teacher Interaction:** One-on-one positive comment, smiling, touching, or gesture.
\- = **Negative Teacher Interaction:** One-on-one reprimand, implementing negative consequence, or negative gesture.
/ = **Neutral Teacher Interaction:** One-on-one expressionless teacher interaction, no approval or disapproval expressed, directions given.

See pp. 121 and 122 for suggestions for use.

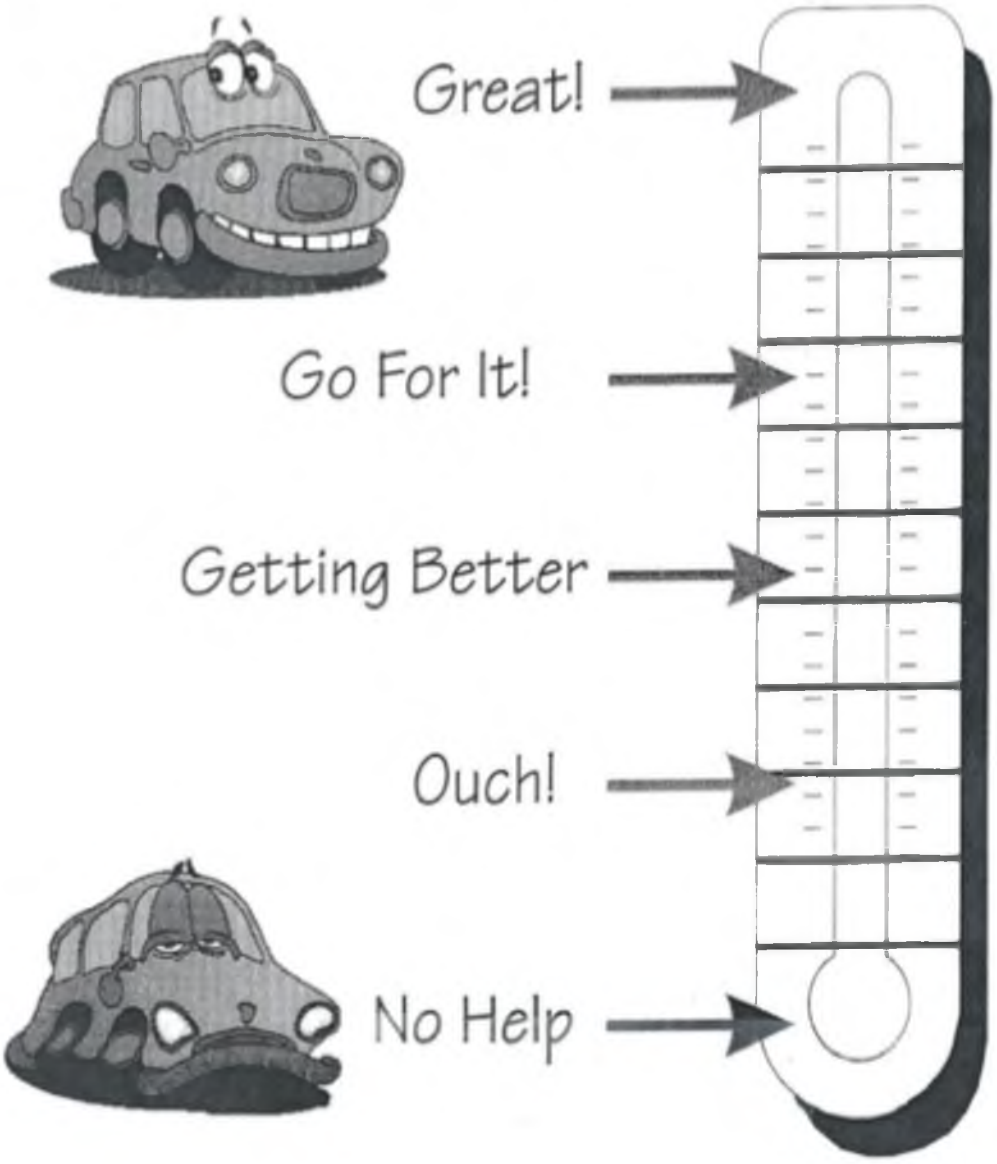
© 2009 Jenson, Rhode & Reavis

APPENDIX D

FUN ‘O’ METER

Tutoring Fun-O-Meter

Date: _____ Subject: _____



APPENDIX E

CURRICULUM-BASED MATH WORKSHEETS

Curriculum-Based Assessment Mathematics
Multiple-Skills Computation Probe: Student Copy

Student:

Date: _____

958 x 1	140 +328	42 +57	11 x22
50 -25	854 x 5	600 +116	21 +31
87 x10	23 -15	173 x 5	381 +206
24 +71	12 x10	26 -17	186 x 3
112 +135	14 +74	59 x11	77 -48

Sheet #1 Computation 4

Password: ARM

Name: _____ Date: _____

A $\frac{3}{7} - \frac{2}{7} =$	B $1\frac{6}{7} + 3 =$	C $4\overline{)6}$	D $6\overline{)78}$	E 875×7
F 6×3	G 9×0	H 244×7	I $6\overline{)48}$	J $5\overline{)20}$
K $2\overline{)50}$	L $6144 - 4420$	M 33×10	N 6×0	O $7\overline{)30}$
P $95225 + 75268$	Q $8\overline{)32}$	R $1156 + 2824 + 83$	S $7\frac{4}{7} - 2 =$	T 38×33
U $\frac{3}{5} + \frac{1}{5} =$	V $982 - 97$	W 9×5	X 4×1	Y $7\overline{)56}$

© 1998 by PRO-ED, Inc.

APPENDIX F

FIDELITY CHECKLISTS

Teacher: Date:

Teacher Orientation Session Checklist

1. **Welcome the teacher and tell him/her about the Electronic Daily School Note intervention package**

   - ☐ Indicate it is an intervention to help students be on-task in their classroom and improve academic performance
   - ☐ Indicate that the Electronic Daily School Note is an online way to record students' on-task and other classroom behavior
   - ☐ Have the teacher choose two optional behaviors to be monitored through the Electronic Daily School Note
   - ☐ Optional behavior #1:

     _____

   - ☐ Optional behavior #2:

     _____

   - ☐ Inform the teacher that the student's parents will also be involved with the program and they will be able to view their child's behavioral ratings every day
   - ☐ Inform the teacher that the student will be randomly rewarded by the researcher or a research assistant for meeting their goal and reviewing the ratings with their parent
   - ☐ Inform the teacher that the student's initial goal will be 70%
   - ☐ Inform the teacher that the student's goal will be increased to 80% after meeting their initial goal 3 consecutive days according to the teacher's ratings on the Electronic Daily School Note

2. **Teach the teacher how to correctly use the Electronic Daily School Note**

   - ☐ Show the teacher a sample Electronic Daily School Note for their participant
   - ☐ Have the teacher access the web address where their participant's Electronic Daily School Note will be located
   - ☐ Have the teacher save the webpage to their desktop
   - ☐ Show the teacher how to rate behaviors on the Electronic Daily School Note
   - ☐ Indicate to the teacher that the Comments section is for general comments and any homework assignments
   - ☐ Show the teacher how to send the Electronic Daily School Note, indicating that the data will be sent to the participant's parents and saved to a spreadsheet for the researcher
   - ☐ Orient the teacher to what the confirmation page looks like
   - ☐ Show the teacher how to view a summary of previous ratings

3. **Show the teacher what the parents will receive based on the teacher's ratings**

   - ☐ Have the teacher view an email based on teacher ratings on the Electronic Daily School Note
   - ☐ Show the teacher how the parents will reply to the email, indicating they have reviewed the ratings with their child
   - ☐ Show the teacher what a "Reward Day Email" looks like

4. **Teach the teacher how to rate the student's behavior on the Electronic Daily School Note**

   - ☐ Play the observation training video
   - ☐ At the end of the observation training video, ask the teacher to rate the example student's on-task behavior as if they were using the Electronic Daily School Note
   - ☐ If the teacher's rating varies by more than 2 points from rounded direct observation data, play the observation training video again and discuss specific examples and non-examples of on-task behavior
   - ☐ Inform the teacher that they will be notified if their ratings on the Electronic Daily School Note differ from rounded direct observation data by more than 2 points

5. **Have the teacher practice using the Electronic Daily School Note**

   - ☐ Have the teacher access the Electronic Daily School Note webpage
   - ☐ Have the teacher create sample ratings based on the "On-Task" and their two optional behaviors
   - ☐ Have the teacher make sample comments in the Comments section of the Electronic Daily School Note
   - ☐ Have the teacher submit the Electronic Daily School Note
   - ☐ Have the teacher view the sample Electronic Daily School Note ratings that would be seen by the parents

6. **Plan for the use of curriculum-based math worksheets**

   - ☐ Indicate that the student is to work on a curriculum-based math worksheet every day during an independent math work time
   - ☐ Indicate that the student should only be allowed 15 minutes to complete as much of the worksheet as they can
   - ☐ Indicate that after the 15 minutes, the teacher should collect the worksheet and the researcher will collect it from them
   - ☐ Inform the teacher that they should complete their Electronic Daily School Note ratings after they have collected the participant's worksheet

7. Review the Teacher Consent Form and BASC-2-TF

- ☐ Review the Teacher Consent Form
- ☐ Ask for any questions regarding the study or their role in the study
- ☐ Review the BASC-2-TF have the teacher complete the questionnaire

Adapted from Knorr (2015)

Participant: Date:
Parent Email:

Parent Orientation Session Checklist

1. **Welcome the parent and tell him/her about the Electronic Daily School Note intervention package**

   - ☐ Indicate it is an intervention to help students be on-task in their classroom and improve academic performance
   - ☐ Indicate that the Electronic Daily School Note is an online way to record students' on-task and other classroom behavior
   - ☐ Inform the parent that their child will be monitored on "On-Task" and the two optional behaviors indicated by the teacher
   - ☐ Optional behavior #1:
     _____
   - ☐ Optional behavior #2:
     _____
   - ☐ Inform the parent that they will also be involved with the intervention and will be able to view their child's behavioral ratings every day
   - ☐ Inform the parents that the ratings will only be given via email submitted through the Electronic Daily School Note program
   - ☐ Inform the parent that they will review with their child the daily ratings given by their teacher
   - ☐ Inform the parent that the child will be randomly rewarded by the researcher or a research assistant for meeting their goal and reviewing the ratings with their parent
   - ☐ Inform the parent that their child's initial goal will be 70%
   - ☐ Inform the parent that their child's goal will be increased to 80% after meeting the initial goal 3 consecutive days according to teacher ratings on the Electronic Daily School Note

2. **Show the parent the Electronic Daily School Note for their participant**

   - ☐ Have the parent indicate what email address they would like the Electronic Daily School Note ratings to be sent to (on the top of this form)
   - ☐ Show the parent a sample Electronic Daily School Note for their child
   - ☐ Indicate that ratings are based on ratings given by the teacher
   - ☐ Indicate that the ratings are on a scale of 0 to 10 with anchors of "Never (0%)" and Always (100%)", respectively
   - ☐ Indicate that the teacher has the option to type general comments and homework assignments in the Comments section of the Electronic Daily School Note

3. **Show the parents what Electronic Daily School Note ratings in their email will look like**

   - ☐ Submit a sample Electronic Daily School Note to the parent's email address
   - ☐ Have the parent open their email and find the Electronic Daily School Note email
   - ☐ Have the parent view the ratings and indicate the ratings of each behavior and any comments made
   - ☐ Ask for any questions on how to read the email
   - ☐ Indicate to the parent that they are to review these ratings with their child
   - ☐ Show the parent how to reply to the researcher's email to inform the researcher that the ratings have been reviewed with their child
   - ☐ Indicate that a "Reward Day Email" will be automatically generated via a vacation responder by the researcher on random days
   - ☐ Show the parent what a "Reward Day Email" will look like after they submit their response email to the researcher

4. **Teach the parent how to appropriately review the Electronic Daily School Note with their child**

   - ☐ Inform the parents they are able to show their child the email they received reporting the teacher's behavior ratings
   - ☐ Inform the parent that only praise should be given to the child based on their ratings and that tangible reinforcers will be given at school
   - ☐ Inform the parent that they should use a positive and natural way of reporting the ratings to the participant
     "Your teacher indicated that you were ___% on-task today during math class. You also had a ____% rating for ____ (optional behavior #1) and ____% for _____ (optional behavior #2)
   - ☐ Inform the parent how to express to their child that a reward may be available for reviewing the Electronic Daily School Note with them
   - ☐ Inform the parent that they should use a natural and positive way of reporting that a reward may be available
     "I have been told there is a Reward Day at school tomorrow. Make sure to go to the school psychologist's office tomorrow to see if you get prizes for meeting your goal and reviewing your ratings with me. Keep up the good work. I am proud of your effort!"

5. **Review the Parent Consent Form**
   - ☐ Review the Parent Consent Form
   - ☐ Ask for any questions regarding the study or their role in the study

Adapted from Knorr (2015)

Participant: Date:

Participant Orientation Session Checklist

1. **Welcome the student and tell him/her about the Electronic Daily School Note intervention package**

   - ☐ Indicate it is an intervention to help students to be on-task in the classroom and to help them complete their classwork
   - ☐ Indicate that the Electronic Daily School Note is an online way for teachers to record his/her on-task and other classroom behavior
   - ☐ Inform the student that he/she will be monitored on "On-Task" and the two optional behaviors chosen by their teacher
   - ☐ Optional behavior #1:

     _____

   - ☐ Optional behavior #2:

     _____

   - ☐ Inform the student that their parent will review the teacher's ratings with them each day
   - ☐ Inform the student that they will be able to earn rewards for meeting their goal and reviewing their Electronic Daily School Note ratings with a parent
   - ☐ Inform the student that their initial on-task goal is 70%
   - ☐ Inform the student that their goal will be increased to 80% after meeting the initial goal 3 consecutive days via teacher ratings on the Electronic Daily School Note

2. **Play the Fasthands instructional video for on-task behavior**

   - ☐ Have the student watch the Fasthands instructional video for on-task behavior
   - ☐ At the end of the video, ask the student to give the definition of on-task: *Looking at the teacher or their work and doing what the teacher wants*
   - ☐ Ask the student to describe what on-task behavior looks like: *(1) Make eye contact with the teacher or task (2) Perform the requested task*
   - ☐ If the student does not give a correct response, give the student the correct responses, have him/her repeat them back to the researcher, play the Fasthands video again, and ask for the correct description of on-task behavior

3. **Show the student an example Electronic Daily School Note**

   - ☐ Show the student a generic Electronic Daily School Note
   - ☐ Indicate that ratings are given by the teacher
   - ☐ Indicate that the ratings are on a scale of 0-10 with anchors of "Never (0%)" and "Always (100%)", respectively

- ☐ Indicate that the teacher can also type comments about the student on the Electronic Daily School Note as well as homework assignments
- ☐ Encourage and assist the student to personalize their Electronic Daily School Note's design by selecting from various color schemes, themes, and background pictures

4. **Show the student what Electronic Daily School Note ratings will look like**

   - ☐ Submit a sample Electronic Daily School Note to the researcher's email address
   - ☐ Open and view the Electronic Daily School Note email
   - ☐ Show the student the email and inform the student of the sample ratings for each behavior and any comments made
   - ☐ Have the student indicate the ratings of each behavior and any comments made on the sample Electronic Daily School Note
   - ☐ Ask for any questions about how to read the email
   - ☐ Indicate that the student is to review these ratings with their parent every day

5. **Inform the student about how to obtain rewards**
   - ☐ Inform the student that they will be randomly rewarded for meeting their goal and reviewing the Electronic Daily School Note with their parent
   - ☐ Inform the student that after they review the Electronic Daily School Note with their parent, an email may automatically be sent to their parent about a Reward Day
   - ☐ Inform the student that if their parent says if there is a Reward Day available, they will go to the school psychologist's office the during the next school day
   - ☐ Tell the student that they can earn prizes for coming to Reward Days
   - ☐ Tell the student that they will be able to earn prizes on the Chart Moves Board and Reward Spinner, including a Mystery Motivator (show them the Reward Spinner and Mystery Motivator and demonstrate how they work)
   - ☐ Tell the student that they will be able to earn a larger prize for completing the Chart Moves Board (show them the Chart Moves Board and demonstrate how it works)
   - ☐ Have the student choose 6 reinforcers to be used with their Rewards Menu, and 1 reinforcer to be used with their Chart Moves Board
   - ☐ Have the student spin the Reward Spinner to obtain a prize from their Rewards Menu

6. **Review the Participant Assent Form**
   - ☐ Review the Participant Assent Form
   - ☐ Ask for any questions regarding the study or their role in the study

Adapted from Knorr (2015)

Participant: Date:

Reward Day Checklist

1. **When the student first comes to the Reward Day**

   - ☐ Greet the student and thank them from coming
   - ☐ Ask if their parent told them about the Reward Day

2. **Review the student's ratings data since the last Reward Day**

   - ☐ From the Google Sheet, find the student's data since the last Reward Day
   - ☐ Review the ratings for the student from the previous days
   - ☐ Review any comments made by the teacher
   - ☐ If homework was noted, ask if the student completed the homework
   - ☐ Ask the student if they have any questions about their ratings

3. **Review the student's last On-Task Electronic Daily School Note rating**

   - ☐ Did the student meet their on-task goal? _____ YES _____ NO

     - **IF YES:** Congratulate the student and praise their efforts. Allow them to color in the right square half on the Chart Moves Board.

     - **IF NO:** Congratulate the student on their efforts. Inform the student that they cannot color in the right square half on the Chart Moves Board. Provide feedback about how they can meet their on-task goal next time.
       - ☐ Ask the student to give the definition of on-task behavior: *Looking at the teacher or their work and doing what the teacher wants*
       - ☐ If the student does not give the correct description, give the student the correct description and have him/her repeat it back
       - ☐ Did the participant accurately describe on-task behavior? _____YES _____NO

       **If the participant describes on-task behavior with 100% accuracy across two consecutive Reward Days, skip this step.*

4. **Inform the student whether a parent response email was received**

   - ☐ Was a parent response email received the day before? _____ YES _____ NO

     - **IF YES:** Congratulate the student and praise their efforts. Allow them to color in the left square half on the Chart Moves Board.

- **IF NO:** Congratulate the student on their efforts. Inform the student that they cannot color in the left square half on the Chart Moves Board. Encourage the student to review their Electronic Daily School Note ratings with a parent.

5. **Reward the student with the Chart Moves Board and Reward Spinner**
   - ☐ Allow the student to make spins on the Reward Spinner according to the number of Reward Dots revealed since the last Reward Day

6. **Determine whether the student met their on-task goal on three consecutive days**

   ☐ Did the student meet their on-task goal on 3 consecutive days?
   ____ YES _____NO

   - **IF YES:** Congratulate the student and praise their efforts. Inform the student that their daily goal will be increased to 80%.
   - **IF NO:** Congratulate the student on their efforts and tell them you look forward to their next meeting.

7. **Student marking the Fun 'O' Meter**

   ☐ Have the student mark the Fun 'O' Meter
   ☐ Ask if the student liked the session and thought it was useful
   ☐ If the student marks the Fun 'O' Meter in the "Ouch!" or "No Help" regions, ask them what is wrong and how you could make the sessions better
   ☐ Try to adjust the sessions to the student's needs to make it fun and helpful

Adapted from Knorr (2015)

Teacher: Date:

Teacher Booster Session Checklist

- ☐ During independent math work time, give the student a class math worksheet
- ☐ Monitor the student's behavior for the 15 minutes allowed for the worksheet
- ☐ Collect the math worksheet after the 15 minutes is completed
- ☐ Access the Electronic Daily School Note after the independent math work time
- ☐ Indicate a rating for the "On-Task" behavior
- ☐ Indicate ratings for the two optional behaviors
- ☐ Make comments and/or indicate homework assignments in the Comments section
- ☐ Click submit on the Electronic Daily School Note

Adapted from Knorr (2015)

Participant Date:

Parent Booster Session Checklist

- ☐ Check email daily for the Electronic Daily School Note data from the teacher
- ☐ Review the Electronic Daily School Note data with their child
- ☐ Review the rating for the "On-Task" behavior
- ☐ Review the rating for the two optional behaviors
- ☐ Review the comments and/or homework assignments made by the teacher
- ☐ Congratulate their child on their efforts
- ☐ Reply to the email, indicating the Electronic Daily School Note has been review with their child
- ☐ If a Reward Day Email is received, indicate to their child that a Reward Day is available when they come to school the next day. Congratulate their child on their efforts and progress.
- ☐ Indicate that their child is to go to the school psychologist's office to see if they have earned a reward

Adapted from Knorr (2015)

APPENDIX G

ELECTRONIC DAILY SCHOOL NOTE

John Doe

Electronic Daily School Note

* Required

Parent's Email *

JohnDoesParentsEmail@gmail.com

On Task *

Looking at the teacher or their work and doing what the teacher wants

0 1 2 3 4 5 6 7 8 9 10

Never (0%) Always (100%)

Follow Directions *

Follows prompts within 10 seconds and when asked the first time

0 1 2 3 4 5 6 7 8 9 10

Never (0%) Always (100%)

KYHFOOTY *

Keep your hands, feet, and other objects to yourself

0 1 2 3 4 5 6 7 8 9 10

Never (0%) Always (100%)

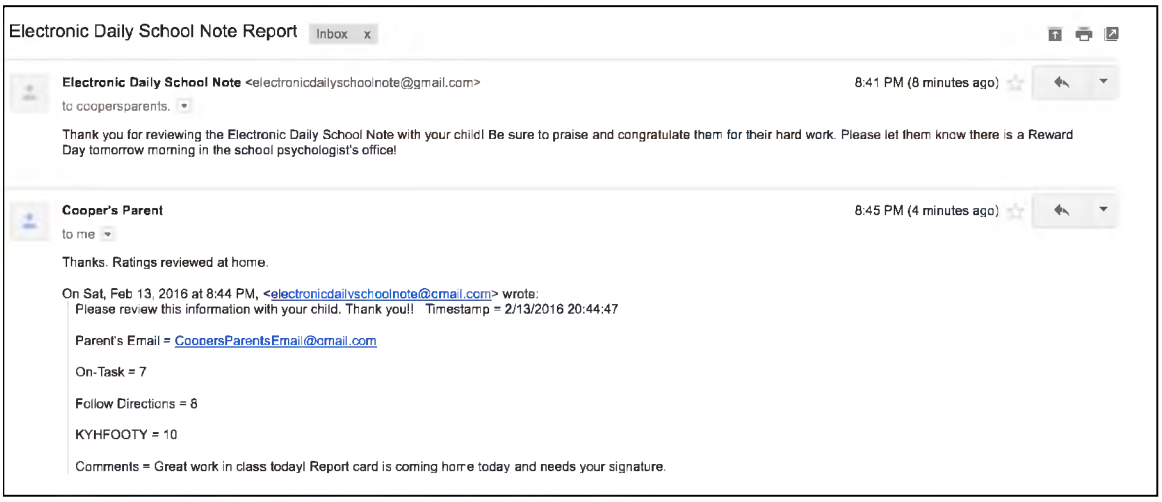
Comments

Include any information you would like the parent to receive or list any assigned homework

Submit

APPENDIX H

REWARD DAY NOTIFICATION



Electronic Daily School Note Report Inbox x

Electronic Daily School Note <electronicdailyschoolnote@gmail.com> 8:41 PM (8 minutes ago)

to coopersparents.

Thank you for reviewing the Electronic Daily School Note with your child! Be sure to praise and congratulate them for their hard work. Please let them know there is a Reward Day tomorrow morning in the school psychologist's office!

Cooper's Parent 8:45 PM (4 minutes ago)

to me

Thanks. Ratings reviewed at home.

On Sat, Feb 13, 2016 at 8:44 PM, <electronicdailyschoolnote@gmail.com> wrote:

> Please review this information with your child. Thank you!! Timestamp = 2/13/2016 20:44:47
>
> Parent's Email = CoopersParentsEmail@gmail.com
>
> On-Task = 7
>
> Follow Directions = 8
>
> KYHFOOTY = 10
>
> Comments = Great work in class today! Report card is coming home today and needs your signature.

APPENDIX I

REWARDS MENU AND REWARD SPINNER

REPRODUCIBLE 6-1a
(Version 1)

Reinforcer Menu

1

2

3

4

5

6

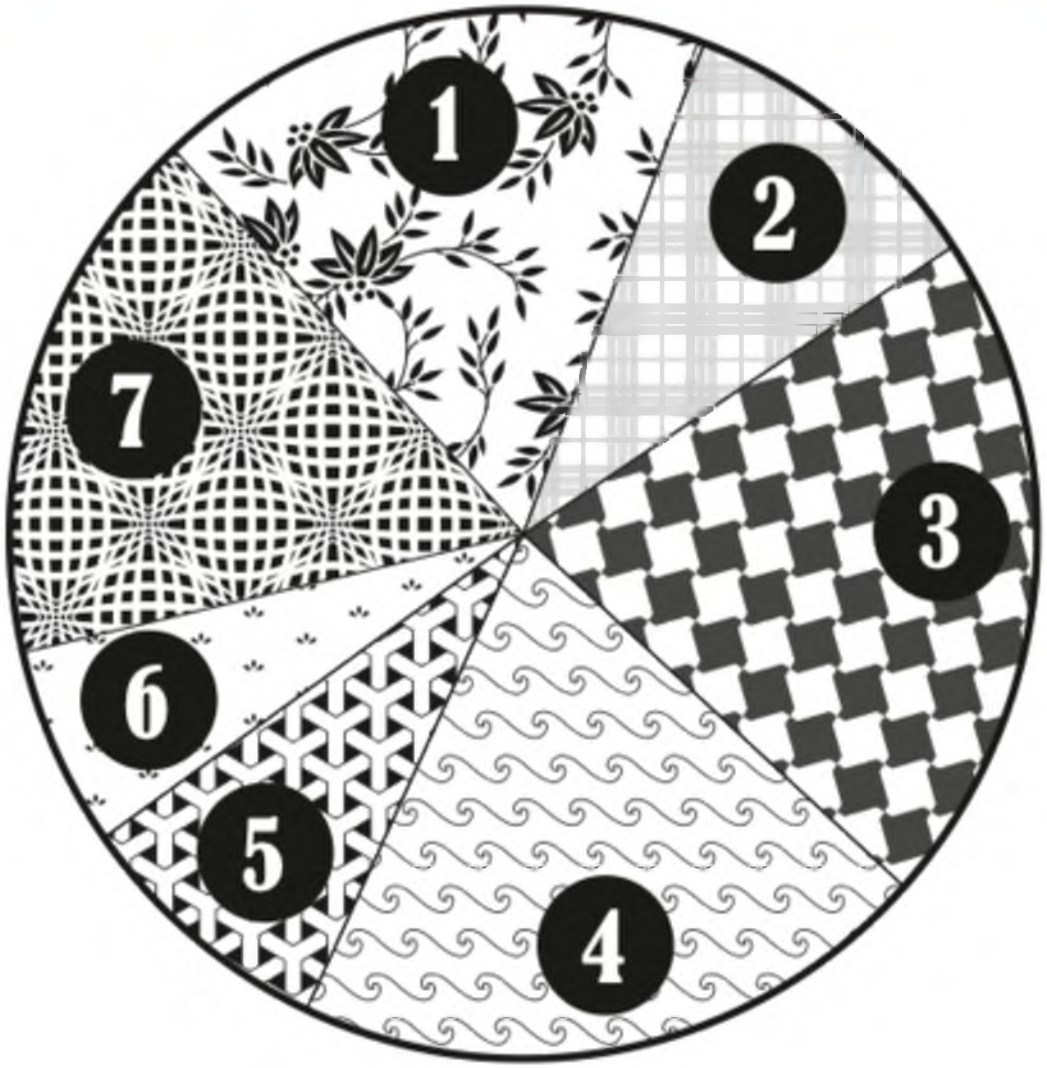
See pp. 75 and 76 for suggestions for use.

© 2009 Jenson, Rhode & Reavis

Tough Kid Tool Box K-12

REPRODUCIBLE 6-6b
(Version 2)

Spinner



See p. 76 for suggestions for use.

© 2009 Jenson, Rhode & Reavis

APPENDIX J

CHART MOVES BOARD


JOHN DOE'S CHART
FINISH!
PIZZ
PARTY
ONE SLICE
AT A TIME!
START!

REFERENCES

Adams, M. B., Womack, S. A., Shatzer, R. H., & Caldarella, P. (2010). Parent involvement in school-wide social skills instruction: Perceptions of a home note program. *Education, 130*, 513-528.

Adamson, R. M. & Wachsmuth, S. T. (2014). A review of direct observation research within the past decade in the field of emotional and behavioral disorders. *Behavioral Disorders, 39*(4), 181-189.

Atkeson, B. M., & Forehand, R. (1979). Home-based reinforcement programs designed to modify classroom behavior: A review and methodological evaluation. *Psychological Bulletin, 86*, 1298-1308.

Baer, D. M., Wolf, M. M., & Risley, T. R. (1987). Some still-current dimensions of applied behavior analysis. *Journal of Applied Behavior Analysis, 20*, 313.

Baer, D. M., Wolf, M. M., & Risley, T. R. (1968). Some current dimensions of applied behavior analysis. *Journal of Applied Behavior Analysis, 1*(1), 91-97.

Bailey, J. S., Wolf, M. M., & Phillips, E. L. (1970). Home-based reinforcement and the modification of pre-delinquents' classroom behavior. *Journal of Applied Behavior Analysis, 3*, 223-233.

Barth, J. (1979). A review of neuromuscular reeducation. A neurological biofeedback perspective. *American Journal of Clinical Biofeedback, 2*(1), 32-33.

Blechman, E. A., Taylor, C. J., & Schrader, S. M. (1981). Family problem solving versus home notes as early intervention with high-risk children. *Journal of Consulting and Clinical Psychology, 49*, 919-926.

Bowen, J., Jenson, W. R., & Clark, E. (2004). *School based interventions for students with behavior problems.* New York, NY: Springer.

Budd, K. S., Leibowitz, J. M., Riner, L. S., Mindell, C., & Goldfarb, A. L. (1981). Home-based treatment of severe disruptive behaviors: A reinforcement package for preschool and kindergarten children. *Behavior Modification, 5*, 273-298.

Burke, M. D., & Vannest, K. J. (2008). Behavioral-progress monitoring using the electronic daily behavioral report card (e-DBRC) system. *Preventing School Failure, 52*(3), 51-59.

Burke, M. D., Vannest, K., Davis, J., Davis, C., & Parker, R. (2009). Reliability of frequent retrospective behavior ratings for elementary school students with EBD. *Behavioral Disorders, 34*(4), 212-222.

Burns, M. K. (2004). Empirical analysis of drill ratio research: Refining the instructional level. *Remedial and Special Education, 25*(3), 167-173.

Cameron, J., Banko, K. M., & Pierce, W. D. (2001). Pervasive negative effects of rewards on intrinsic motivation: The myth continues. *The Behavior Analyst, 24*(1), 1-44.

Cameron, J. & Pierce, W. D. (1996). The debate about rewards and intrinsic motivation: Protests and accusations do not alter the results. *Review of Educational Research, 66*(1), 39-51.

Cameron, J. & Pierce, W. D. (1994). Reinforcement, reward, and intrinsic motivation: A meta-analysis. *Review of Educational Research, 64*, 363-423.

Chafouleas, S. M. (2013, November). *Direct Behavior Rating: Overview of use in assessing student behavior within multitiered models of service delivery.* Paper presented at the Rhode Island School Psychologists Association Conference, Providence, RI.

Chafouleas, S. M., McDougal, J. L., Riley-Tillman, T. C., Panahon, C. J., & Hilt, A. M. (2005). What do daily behavior report cards (DBRC's) measure? An initial comparison of DBRC's with direct observation for off-task behavior. *Psychology in the Schools, 42*, 669-676.

Chafouleas, S. M., Riley-Tillman, T. C., & McDougal, J. L. (2002). Good, bad, or in-between: How does the daily behavior report card rate? *Psychology in the Schools, 39*(2), 157-169.

Chafouleas, S. M., Riley-Tillman, T. C., & Sassu, K. A. (2006). Acceptability and reported use of daily behavior report cards among teachers. *Journal of Positive Behavior Interventions, 8*(3), 174-182.

Chafouleas, S. M., Riley-Tillman, T. C., Sassu, K. A., LaFrance, M. J., & Patwa, S. S. (2007). Daily behavior report cards: An investigation of the consistency of on-task data across rater and methods. *Journal of Positive Behavior Interventions, 9*(1), 30-37.

Chance, P. (1993). The rewards of learning. *Phi Delta Kappan, 74*, 200-207.

Chance, P. (1993). Sticking up for rewards. *Phi Delta Kappan, 74*, 787-790.

Christ, T. J., Nelson, P. M., Van Norman, E. R., Chafouleas, S. M., & Riley-Tillman, T. C. (2014). Direct behavior rating: An evaluation of time-series interpretations as consequential validity. *School Psychology Quarterly, 29*(2), 157-170.

Christ, T. J., Riley-Tillman, T. C., Chafouleas, S. M., & Boice, C. H. (2010). Direct behavior rating (DBR): Generalizability and dependability across raters and observations. *Educational and Psychological Measurement, 70*, 825-843.

Cohen, J. (1998). *Statistical power analysis for behavioral sciences* (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum Associates.

Collins, A., & Halverson, R. (2010). The second educational revolution: Rethinking education in the age of technology. *Journal of Computer Assisted Learning, 26*(1), 18-27.

Cooper, A. (2010). *Google doc home notes: A paperless method to increase home-school collaboration.* Unpublished manuscript, Department of Educational Psychology, University of Utah, Salt Lake City, UT.

Cox, D. D. (2005). Evidence-based interventions using home-school collaboration. *School Psychology Quarterly, 20*(4), 473-497.

Cuvo, J. C. (1979). Multiple-baseline design in instructional research: Pitfalls of measurement and procedural advantages. *American Journal of Mental Deficiency, 84*(3), 219-228.

Deci, E. L., Koestner, R., & Ryan, R. M. (1999). Meta-analytic review of experiments examining the effects of extrinsic rewards on intrinsic motivation. *Psychological Bulletin, 125*, 627-668.

De Martini-Scully, D., Bray, M. A., & Kehle, T. J. (2000). A packaged intervention to reduce disruptive behaviors in general education students. *Psychology in the Schools, 37*(2), 149-156.

Dougherty, E. H., & Dougherty, A. (1977). The daily report card: A simplified and flexible package for classroom management. *Psychology in the Schools, 14*(2), 191-195.

Drew, B. M. (1982). Increasing assignment completion and accuracy using a daily report card procedure. *Psychology in the Schools, 19*, 540-547.

Ducharme, J. M., & Shecter, C. (2011). Bridging the gap between clinical and classroom intervention: Keystone approaches for students with challenging behavior. *School Psychology Review, 40*(2), 257-274.

DuPaul, G. J. (1991). Attention-deficit/hyperactivity disorder: Classroom intervention strategies. *School Psychology International, 12*(1-2), 85-94.

Edlund, C. V. (1969). Rewards at home to promote desirable school behavior. *Teaching Exceptional Children, 1*(4), 121-127.

Education Regulations: Burying Schools In Paperwork: Hearing before the Subcommittee on Early Childhood, Elementary, and Secondary Education of the Committee on Education and the Workforce, House of Representatives, 112th Cong. 1 (2011).

Elliot, S. N. (1986). Children's ratings of the acceptability of classroom interventions for misbehavior: Findings and methodological considerations. *Journal of School Psychology, 24*, 23-35.

Elliot, S. N., & Treuting, M. V. (1991). The behavior intervention rating scale: Development and validation of a pretreatment acceptability and effectiveness measure. *The Journal of School Psychology, 29*(1), 43-51.

Fabiano, G. A., Vujnovic, R. K., Pelham, W. E., Waschbusch, D. A., Massetti, G. M., Pariseau, M. E., Naylor, J., Yu, J., Robins, M., Carnefix, T., Greiner, A. R., & Volker, M. (2010). Enhancing the effectiveness of special education programming for children with attention-deficit/hyperactivity disorder using a daily report card. *School Psychology Review, 39*(2), 219-239.

Fabiano, G. A., Vujnovic, R., Naylor, J., Pariseau, M., & Robins, M. (2009). An investigation of the technical adequacy of a daily behavior report card (DBRC) for monitoring progress of students with attention-deficit/hyperactivity disorder in special education placements. *Assessment of Effective Intervention, 34*(4), 231-241.

Frafjord-Jacobson, K. L., Hanson, A. C., McLaughlin, T. F., Stansell, A., & Howard, V. F. (2013). Daily report card: A recommended intervention in the schools. *International Journal of Basics and Applied Sciences, 1*, 461-472.

Fuchs, L. S., Hamlett, C. L., & Fuchs, D. (1998). *Monitoring basic skills progress: Basic math* (2nd ed.). Austin, TX: Pro-Ed.

Galloway, J., & Sheridan, S. M. (1994). Implementing scientific practices through case studies: Examples using home-school interventions and consultation. *Journal of School Psychology, 32*, 385-413.

Gable, L. F. (2002). *The efficacy of a school-home note intervention using Internet communication for decreasing inappropriate classroom behaviors of secondary level students* (Doctoral dissertation). Retrieved from ProQuest Dissertations and Theses database. (UMI No. 3043147)

Grady, E. (2013). *The development of an enhanced school home note intervention: Applying key behavioral parenting training components to improve the outcomes of school based behavioral intervention* (Doctoral dissertation). Retrieved from ProQuest Dissertations and Theses database. (UMI No. 3588691)

Greenwood, C. R., Horton, B. T., & Utley, C. A. (2002). Academic engagement: Current perspectives on research and practice. *School Psychology Review, 31*, 328-349.

Hagermoser Sanetti, L. M., Collier-Meek, M. A., Long, A. C., Kim, J., & Kratochwill, T. R. (2014). Using implementation planning to increase teachers' adherence and quality to behavior support plans. *Psychology in the Schools, 5*, 879-895.

Harrison, S. E., Riley-Tillman, T. C., & Chafouleas, S. M. (2014). Direct behavior rating: Considerations for rater accuracy. *Canadian Journal of School Psychology, 29*(1), 3-20.

Harvey, M. T., May, M. E., & Kennedy, C. H. (2004). Nonconcurrent multiple baseline designs and the evaluation of educational systems. *Journal of Behavioral Education, 13*, 267-276.

Hintze, J. M. & Matthews, W. J. The generalizability of systematic direct observations across time and setting: A preliminary investigation of the psychometrics of behavioral observation. *School Psychology Review, 33*, 258-270.

Holdaway, A. S., & Owens, J. S. (2015). The effect of training and consultation condition on teachers' self-reported likelihood of adoption of a daily report card. *Journal of Educational Psychology*, *107*(1), 222-235.

Horner, D. R., & Baer, D. M. (1978). Multiple-probe techniques: A variation of the multiple baseline. *Journal of Applied Behavior Analysis, 11*, 189-196.

Jenson, W. R., & Reavis, H. K. (1996). Homenotes to improve motivation. In H. K. Reavis, M. T. Sweeten, W. R. Jenson, D. P. Morgan, D. J. Andrews, & S. Fister (Eds.), *Best practices: Behavioral and educational strategies for teachers* (pp. 29-39). Longmont, CO: Sopris West.

Jenson, W. R., & Sprick, M. S. (2014). *The tough kid: On-task in a box.* Eugene, OR: Pacific Northwest Publishing.

Jenson, W. R., Rhode, G., & Reavis, H. K. (1995). *The tough kid tool box.* Longmont, CO: Sopris West.

Jenson, W. R., Rhode, G., & Reavis, H. K. (2009). *The tough kid tool box.* Eugene, OR: Pacific Northwest Publishing.

Johnson, K. R. (2008). *A comparison of home and school-based reinforcement of home notes* (Unpublished doctoral dissertation). University of Utah, Salt Lake City, UT.

Jurbergs, N., Palcic, J. L., & Kelley, M. L. (2010). Daily behavior report cards with and without home-based consequences: Improving behavior in low income, African American children with ADHD. *Child and Family Behavior Therapy, 32*(3), 177-195.

Jurbergs, N., Palcic, J., & Kelley, M. L. (2007). School-home notes with and without response cost: Increasing attention and academic performance in low-income children with Attention-Deficit/Hyperactivity Disorder. *School Psychology Quarterly, 22*, 358-379.

Karraker, R. J. (1972). Disadvantaged adolescents and delay of reinforcement in a token economy. *Proceedings of the Annual Convention of American Psychological Association, 7*(2), 763-764.

Kazdin, A. E., & Kopel, S. A. (1975). On resolving ambiguities of the multiple-baseline design: Problems and recommendations. *Behavior Therapy, 6*, 601-608.

Kelley, M. L. (1990). *School-home notes: Promoting children's classroom success.* New York City, NY: The Guilford Press.

Kelley, M. L. & Carper, L. B. (1988). Home-based reinforcement procedures. In J. C. Witt, S. N. Elliot, & F. M. Gresham (Eds.), *Handbook of behavior therapy in education* (pp. 419-438). New York City, NY: Springer.

Kelley, M. L., & Jurbergs, N. (2009). Daily report cards: Home-based consequences for classroom behaviors. In A. Akin-Little, S. G. Little, M. A. Bray, & T. J. Kehle (Eds.), *Behavioral interventions in schools: Evidence based positive strategies* (pp. 221-229). Washington, DC: American Psychological Association.

Kelley, M. L., & McCain, A. P. (1995). Promoting academic performance in inattentive children: The relative efficacy of school-home notes with and without response cost. *Behavior Modification, 19*, 357-375.

Kelley, M. L. & Palcic, J. L. (2008). Daily behavior report cards: Home-school contingency management procedures. In W. T. O'Donohue & J. E. Fisher (Eds.), *Cognitive behavior therapy: Applying empirically supported techniques in your practice* (pp. 123-131). Hoboken, NJ: Wiley.

Kilgus, S. P. (2013). Use of direct behavior ratings as the foundation of tier 2 service delivery. *Journal of Curriculum and Instruction, 7*(1), 79-99.

Kohn, A. (1993). Rewards versus learning: A response to Paul Chance. *Phi Delta Kappan, 74*, 783-787

Knorr, J. (2015). *A validation and efficacy study examining the electronic home note intervention package for increasing rates of on-task and academic performance* (Doctoral dissertation). Retrieved from ProQuest Dissertation and Theses database. (UMI No. 3727085)

Lahey, B. B., Gendrich, J. G., Gendrich, S. I., Schnelle, J. F., Gant, D. S., & McNees, M. P. (1977). An evaluation of daily report cards with minimal teacher and parent contacts as an efficient method of classroom intervention. *Behavior Modification, 1*, 381-394.

Leach, D. J. & Byrne, M. K. (1986). Some 'spill-over' effects of a home-based reinforcement programme in a secondary school. *Educational Psychology, 6*, 265-276.

LeBel, T. J., Chafouleas, S. M., Britner, P. A., & Simonsen, B. (2012). Use of a daily behavior report card in an intervention package involving home-school communication to reduce disruptive behavior in preschoolers. *Journal of Positive Behavior Interventions, 15*(2), 103-112.

LeBel, T., Kilgus, S. P., Briesch, A. M., & Chafouleas, S. (2010). The impact of training on the accuracy of teacher-completed direct behavior ratings (DBRs). *Journal of Positive Behavior Interventions, 12*(1), 55-63.

Long, N. & Edwards, M. (1994). The use of a daily report card to address children's school behavior problems. *Contemporary Education, 65*(3), 152-155.

McCain, A., & Kelley, M. L. (1994). Improving classroom performance in underachieving preadolescents: The additive effects of response cost to a school-home note system. *Child and Family Behavior Therapy, 16*, 27-41.

McCain, A. P. & Kelley, M. L. (1993). Managing the classroom behavior of an ADHD preschooler: The efficacy of a school-home note intervention. *Child and Behavior Therapy, 15(*3), 33-44.

McKissick, C., Hawkins, R. O., Lentz, F. E., Hailey, J., & McGuire, S. (2010). Randomizing multiple contingency components to decrease disruptive behaviors and increase student engagement in an urban second-grade classroom. *Psychology in the Schools, 47*(9), 944-959.

McDougall, D., Hawkins, J., Brady, M., & Jenkins, A. (2006). Recent innovations in the changing criterion design: Implications for research and practice in special education. *Journal of Special Education, 40*(1), 2-15.

McGoey, K. E., Prodan, T., & Condit, N. (2007). Examining the effects of teacher and self-evaluation of disruptive behaviors via school-home notes for two young

children in kindergarten. *Journal of Early and Intensive Behavior Intervention, 3*(1), 365-376.

National Association of School Psychologists. (2012). *School-family partnering to enhance learning: Essential elements and responsibilities.* Retrieved June 16, 2015, from National Association of School Psychologists: http://www.nasponline.org/about_nasp/positionpapers/Home-SchoolCollaboration.pdf

Olive, M. L., & Smith, B. W. (2005). Effect size calculations and single subject designs. *Educational Psychology, 25*(2-3), 313-324.

Owens, J. S., Holdaway, A. S., Zoromski, A. K., Evans, S. W., Himawan, L. K., Girio-Herrera, E., & Murphy, C. E. (2012). Incremental benefits of a daily report card intervention over time for youth with disruptive behavior. *Behavior Therapy, 43*, 848-861.

Parker, R. I., Vannest, K. J., & Brown, L. (2009). The improvement rate difference for single-case research. *Exceptional Children, 75*(2), 135-150.

Parker, R. I., Vannest, K. J., & Davis, J. L. (2011). Effect size in single-case research: A review of nine overlap techniques. *Behavior Modification, 35*, 303-322.

Parker, R. I., Vannest, K. J., Davis, J. L., & Sauber, S. B. (2011). Combining nonverlap and trend for single-case research: Tau-U. *Behavior Therapy, 42*, 284-299.

Pelham, W. E. & Fabiano, G. A. (2008). Evidence-based psychosocial treatments for attention-deficit/hyperactivity disorder. *Journal of Clinical Child and Adolescent Psychology, 37*(1), 184-214.

Reavis, K. H., Kukic, S. J., Jenson, W. R., Morgan, D. P., Andrews, D. P., & Fister, S. F. (1996). *Best practices: Behavioral and educational strategies for teachers.* Longmont, CO: Sopris West.

Reynolds, C. R., & Kamphaus, R. W. (2004). *Manual for the behavior assessment system for children* (2nd ed.). Circle Pines, MN: AGS Publishing.

Rhode, G., Jenson, W. R., & Reavis, K. (2010). *The tough kid book: Practical classroom strategies* (2nd ed.). Eugene, OR: Pacific Northwest.

Riley-Tillman, T. C., Chafouleas, S. M., & Briesch, A. M. (2007). A school practitioner's guide to using daily behavior report cards to monitor student behavior. *Psychology in the Schools, 44*(1), 77-89.

Riley-Tillman, T. C., Chafouleas, S. M., Briesch, A. M., & Eckert, T. L. (2008). Daily behavior report cards and systematic direct observation: An investigation of the

acceptability, reported training and use, and decision reliability among school psychologists. *Journal of Behavior Education, 17*(4), 313-327.

Riley-Tillman, T. C., Chafouleas, S. M., Christ, T., Briesch, A. M., & LeBel, T. J. (2009). The impact of item wording and behavioral specificity on the accuracy of direct behavior ratings (DBRs). *School Psychology Quarterly, 32*(1), 1-12.

Riley-Tillman, T. C., Chafouleas, S. M., Sassu, K. A., Chanese, J. A., & Glazer, A. D. (2008). Examining the agreement of direct behavior ratings and systematic direct observation data for on-task and disruptive behavior. *Journal of Positive Behavior Interventions, 10*(2), 136-143.

Riley-Tillman, T. C., Christ, T. J., Chafouleas, S. M., Boice-Mallach, C. H., & Briesch, A. (2011). The impact of observation duration on the accuracy of data obtained from direct behavior rating (DBR). *Journal of Positive Behavior Interventions, 13(2)*, 119-128.

Rogers, J. L., & Nicewander, W. A. (1988). Thirteen ways to look at the correlation coefficient. *The American Statistician, 42*(1), 59-66.

Ross, S. G. (2012). *Measuring response to intervention: Comparing three effect size calculation techniques for single-case design analysis* (Doctoral dissertation). Retrieved from ProQuest Dissertations and Theses database. (UMI No. 3521063)

Ryan, R. M. & Deci, E. L. (1996). When paradigms clash: Comments on Cameron and Pierce's claim that rewards do not undermine intrinsic motivation. *Review of Educational Research, 66*(1), 33-38.

Schlientz, M. D., Riley-Tillman, T. C., Briesch, A. M., Walcott, C., & Chafouleas, S. M. (2009). The impact of training on the accuracy of direct behavior ratings (DBRs). *School Psychology Quarterly, 24*(2), 73-83.

Schumaker, J. B., Hovell, M. F., & Sherman, J. A. (1977). An analysis of daily report cards and parent-managed privileges in the improvement of adolescents' classroom performance. *Journal of Applied Behavior Analysis, 10*(3), 449-464.

Shayne, P. A. (2008). *Home-school communication with parents of middle school students: A study on the effects of technology* (Doctoral dissertation). Retrieved from ProQuest Dissertations and Theses database. (UMI no. 3324218)

Sheridan, S. M., Bovaird, J. A., Glover, T. A., Garbacz, S. A., & Witte, A. (2012). A randomized trial examining the effects of conjoint behavioral consultation and the mediating role of the parent-teacher relationship. *School Psychology Review, 41*(1), 23-46.

Smith, M. A., Williams, R. L., & McLaughlin, T. F. (1983). The daily report card as an intervention technique for classroom academic and social behavior: A review. *Journal of Special Education, 7*, 369-380.

Stichter, J. P., Lewis, T. J., Whittaker, T. A., Richter, M., Johnson, N. W., & Trussell, R. P. (2009). Assessing teacher use of opportunities to respond and effective classroom management strategies: Comparisons among high- and low-risk elementary schools. *Journal of Positive Behavior Interventions, 11*(2), 68-81.

Trovato, J. & Bucher, B. (1980). Peer tutoring with or without home-based reinforcement, for reading remediation. *Journal of Applied Behavior Analysis, 13*(1), 129-141.

U.S. Department of Education, Office of Special Education and Rehabilitative Services, Office of Special Education Programs (2004). Teaching children with attention-deficit/hyperactivity disorder: Instructional strategies and practices. Washington, D.C.: Author

Utah Board of Education. (2014). SAGE Results Companion Document. Retrieved from http://www.schools.utah.gov/assessment/SAGE/ResultsCompanion.aspx

Utah Board of Education. (2013). *SAGE Summative Proficiency Level Descriptors*. Retrieved from http://sageportal.org/resources/

Utah Board of Education (n.d.). Information for Educators on Utah's SAGE Assessment System [Brochure]. Salt Lake City, UT: Author

Vannest, K. J., & Burke, M. D. (2006). *Electronic daily behavior report card (e-DBRC): A web based system for progress monitoring (Version 3.0) [Web-based application]*. Retrieved February 6, 2015, from http://d2k.tamu.edu/products/e-dbrc.php

Vannest, K. J., Burke, M. D., Payne, T. E., Davis, C. R., & Soares, D. A. (2011). Electronic progress monitoring of IEP goals and objectives. *Teaching Exceptional Children, 43*(5), 40-51.

Vannest, K. J., Burke, M. D., Saubre, S. B., Davis, J. L., & Davis, C. L. (2011). Daily behavior report cards as evidence-based practice for teachers. *Beyond Behavior, 20*(2), 13-21.

Vannest, K. J., Davis, J. L., Davis, C. R., Mason, B. A., & Burke, M. D. (2010). Effective intervention for behavior with a daily behavior report card: A meta-analysis. *School Psychology Review, 39*(4), 654-672.

Vannest, K. J., & Ninci, J. (2015). Evaluating intervention effects in single-case research designs. *Journal of Counseling & Development, 93*, 403-411.

Volpe, R. J. & Briesch, A. M. (2012). Generalizability and dependability of single-item and multiple-item direct behavior rating scales for engagement and disruptive behavior. *School Psychology Review, 41*(3), 246-261.

Volpe, R. J., & Fabiano, G. A. (2013). *Daily behavior report cards: An evidence based system of assessment and intervention.* New York, NY: The Guilford Press.

Vujnovic, R., Fabiano, G. A., Pariseau, M. E., & Naylor, J. (2013). Parameters of adherence to a yearlong daily report card intervention for students with attention-deficit/hyperactivity disorder. *Journal of Educational and Psychological Consultation, 23*, 140-163.

Walker, H. M., Ramsey, E., & Gresham, F. (2004). *Antisocial behavior in school: Evidence-based practices* (2nd ed.). Belmont, CA: Wadsworth.

Walker, H. M., & Rankin, R. (1983). Assessing the behavioral expectations and demands of less restrictive environments. *School Psychology Review*, *12*, 274-284.

Watson, P. J. & Workman, E. A. (1981). The non-concurrent multiple baseline across-individuals design: An extension of the traditional multiple baseline design. *Journal of Behavior Therapy and Experimental Psychiatry, 12*, 257-259.

Williams, K. L., Noell, G. H., Jones, B. A., & Gansle, K. A. (2012). Modifying students' classroom behaviors using an electronic daily behavior report card. *Child and Family Behavior Therapy, 34*(4), 269-289.

Witt, J.C., Martens, B. K., Elliot, S. N. (1984). Factors affecting teacher's judgments of the acceptability of behavioral interventions: Time involvement, behavior problem severity, type of intervention. *Behavior Therapy, 15*(2), 204-209.

Witt, J. C., Noell, G. H., LaFleur, L. H., & Mortenson, B. P. (1997). Teacher use of interventions in general education settings: Measurement and analysis of the independent variable. *Journal of Applied Behavior Analysis*, *30*, 693-696.